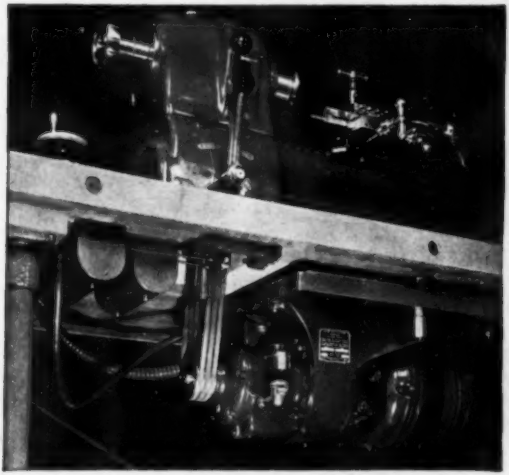
HITCHCOCK'S *Machine Tool* BLUE BOOK

FOUNDED DECEMBER 1937 19

HARDINGE BALL BEARING BENCH LATHE



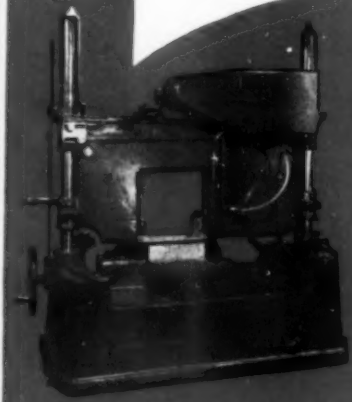
gives *infinite speed control* with

NEW DEPARTURE *Variable Speed* TRANSITORQ

Send Quickmail Coupon No. 1 for Bulletin BB. Hardinge Brothers, Inc., Elmira, N. Y.

PUBLISHED AT 508 SO. DEARBORN ST., CHICAG

The MARVEL No. 18 Hack Saw



for Big Work

Capacity 18"x18" Hydraulic Roll Feed Universal

especially designed for

Steel Mills, Warehouses, Forge Shops, Die Shops,

and all other heavy duty large size work.

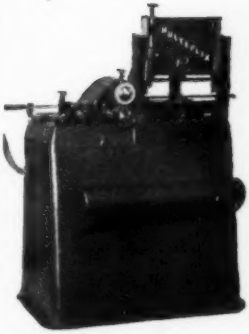
A Heavy Duty Saw, especially designed for the larger sizes and tougher alloy steels of **today** and **tomorrow.** This saw introduces two important features in power saws (1) The roll stroke (a new action similar to the chip-clearing action of a carpenter's hand saw) that ends "dragging" of blade through the cut; and (2) New **low pressure** hydraulic feed—so simplified that anyone can understand, operate and maintain it. This giant saw sets a new standard and a pattern for the saws of tomorrow.

Send Coupon No. 5 for Bulletin 18

ARMSTRONG-BLUM MFG. CO.

5741 Bloomingdale Ave., CHICAGO

MULTEPLEX
High Production Wire Forming Machines



Multeplex units will quickly pay for themselves—and thereafter pay dividends in producing uniform, formed wires that do not have to be handled again. Easily set-up—dies easily changed.

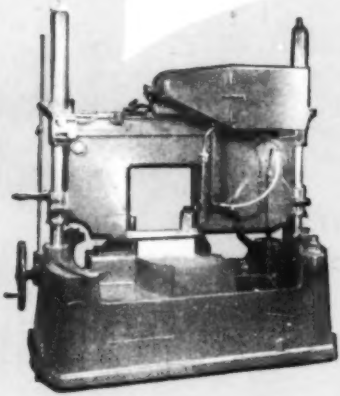
REDUCE CUT-OFF AND WIRE FORMING COSTS TO A MINIMUM

Entirely automatic, the wire is fed from a reel, straightened, cut to length and formed exactly to your requirements. Formed wires are ejected and neatly piled. Model E-24 shown above handles wires 10 gauge and smaller, up to 24" cutting and 16" forming length. Model D-10 at left handles 12" cutting and 8" forming length.

Quickmail Coupon No. 81 will bring you full information. Send samples or sketches of your wires and let us quote.

ECONOMY TOOL & MACHINE COMPANY
MUSKEGON HEIGHTS, MICHIGAN

The MARVEL No. 18 Hack Saw



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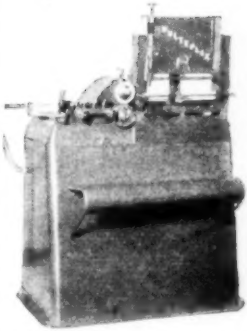

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ECONOMY TOOL & MACHINE COMPANY

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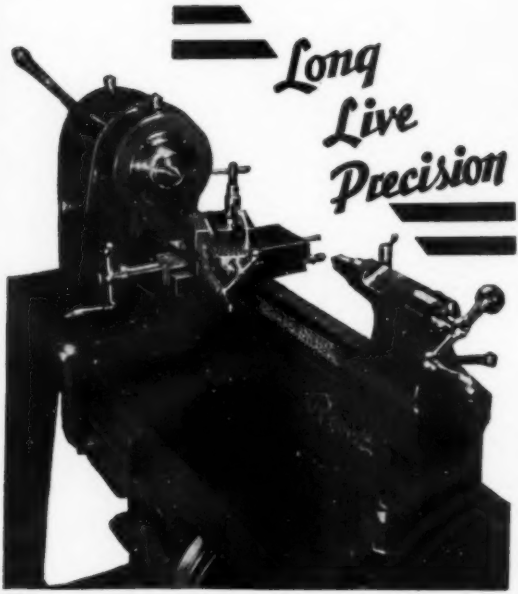

TO GIVE PRECISION

Timken zero precision mirror finish roller bearings — dynamic balance of every rotating part — accurate gauging and inspection

TO KEEP PRECISION

Maximum slide areas — sturdy construction — three point bed mounting — perfection in material and workmanship

RIVETT LATHE & GRINDER INC.
BRIGHTON, BOSTON, MASS.
PIONEERS IN BENCH LATHE DEVELOPMENT

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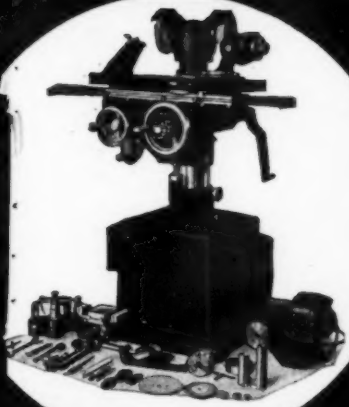
UNIVERSAL CUTTER AND TOOL GRINDERS



For Accurate and Economical Grinding

The Gra[illegible] Universal Grinder is designed and built to meet the demand for a high grade machine of medium capacity to sell at a moderate price. Convenient operation received first consideration. These machines may be operated from either front or rear. Transverse, vertical and longitudinal movement can be made from either position by hand wheel or lever.

Send Coupon No. 72 for Bulletin Giving Complete Information

MANUFACTURED BY

GALLMEYER & LIVINGSTON CO

303 STRAIGHT AVE., GRAND RAPIDS, MICH

SJOGREN

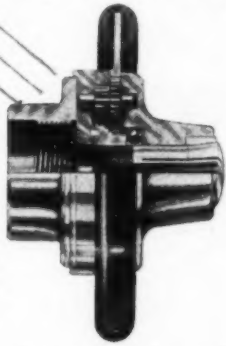
PRONOUNCED (SHOW-GREN)

SPEED COLLET CHUCK

FOR YOUR

Tool-Room and Engine Lathes

- **Saves Time**
- **Increases Capacity**
- **Eliminates Keys and Wrenches**
- **Increases Production**
- **Affords Greater Accuracy**
- **Three sizes up to 1¾" Capacity**



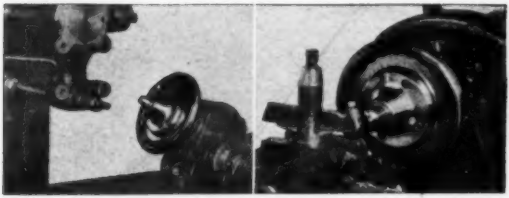
THE amazingly fast action of the Sjogren Speed Collet Chuck gives it full right to its name! An almost effortless turn of the hand-wheel, one way or the other, automatically opens or closes the collet, releasing or gripping the work as desired. Its grip is adjustable and sure. Most operators simply lay a hand on the wheel and run the lathe forward to tighten the collet . . . reverse to loosen.

METHOD OF MOUNTING: An intermediate plate is used to adapt the Sjogren Speed Chuck for machines with threaded nose spindle. It is mounted in the same manner as an ordinary 3 or 4 jaw chuck. Also, they are furnished complete, ready for use with machines having standard tapered key-drive or cam lock spindles.

● See List of Distributors on Opposite Page ●

Sjogren Manufacturing Company

"Save Time and Increase Accuracy"

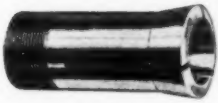


In use on Milling Machine **In use on Engine Lathe**

WITH the Sjogren Speed Collet Chuck, *the operator is always in front of his work and he stays there!* There is no need to reach over—or to walk back of the lathe headstock—to grip or release material in the collet.

Through the increased production and machinist efficiency, caused by the elimination of lost time and waste motion, the Sjogren Speed Collet Chuck *more than pays for itself!*

—FURNISHED WITH HARDINGE PRECISION COLLETS—



HARDINGE Spring Collets are furnished for use in Sjogren Speed Collet Chucks and embody those elements of precision which have characterized their products since 1890. The combination naturally assures the greatest degree of accuracy in the holding of bar stock or parts to be machined.

● ***Ask for complete Illustrated Bulletin. Write to the nearest distributor or send Quickmail Coupon No. 2.***

● DISTRIBUTORS ●

Ray H. Morris & Company, Inc.	7 South Main Street	West Hartford, Conn.
Hardinge Sales Company, Inc.	277 Lafayette St.	New York, New York
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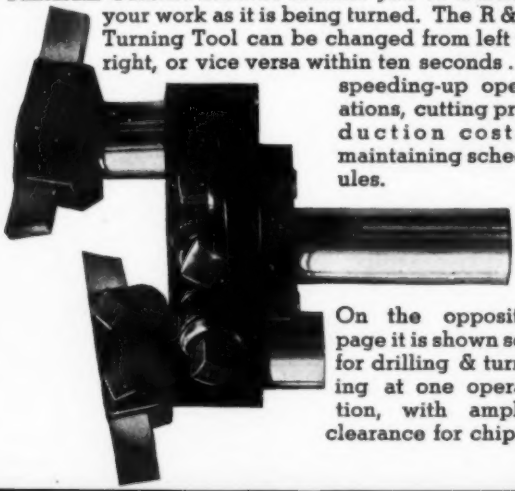
Hardinge Brothers, Inc.	1418 College Ave.	Elmira, New York
W. W. Wentz	113 Powers Building	Rochester, New York
William K. Stamets,	Jenkins Arcade Bldg.	Pittsburgh, Penna.
Cleveland Duplex Mchry Co., Inc.	Penton Building	Cleveland, Ohio
E. A. Kinsey Company	331-335 W. Fourth St.	Cincinnati, Ohio
Iverson & Laux	544 W. Washington Blvd.	Chicago, Illinois
F. A Durnell	709 Carlisle Place	Indianapolis, Indiana
National Sales Engineering Corp.	2970 W. Grand Blvd.	Detroit, Michigan
Northern Machinery & Supply Co.	Lumber Exchange Bldg.	Minneapolis, Minn.
Colcord Wright Mchry. & Sup. Co.	1223-1229 N. Broadway	St. Louis, Missouri
C. H. Gosiger Machinery Co.	Bacon & McDonough Sts	Dayton, Ohio
Moore Machinery Company	550 Fifth Street	San Francisco, Calif.
Eccles & Davies Mchry. Co., Inc.	1910 Santa Fe Ave.	Los Angeles, Calif.

Sjogren Manufacturing Company

Right R and L Left

new and better . . .

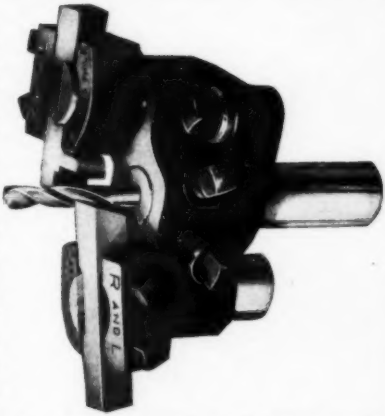
Here's a new tool that does a better job . . . saves time, trouble and money . . . speeds-up production . . . replaces at least fourteen ordinary tools. Set-up as illustrated, it serves as a balanced turning tool with one cutter in advance of the other . . . turning two diameters at the same operation if desired. The Tantalum Carbide bracket enables you to burnish your work as it is being turned. The R & L Turning Tool can be changed from left to right, or vice versa within ten seconds . . . speeding-up operations, cutting production costs, maintaining schedules.



On the opposite page it is shown set for drilling & turning at one operation, with ample clearance for chips.

R and L Tools, 1825 Bristol St.,

Turning Tool



The R and L Floating Construction permits the drill to be centered accurately which overcomes any discrepancies in the machine. The set-up shown is particularly useful on a multi-spindle unit where lack of a sufficient number of positions would entail subsequent operations. The R and L Turning Tool offers you an actual cash saving of $235 initial outlay over the cost of the tools necessary to do the jobs it will perform with ease. It burnishes, cuts, drills . . . Doesn't that sound worthy of your investigation?

Made in three standard sizes, or built to order to your specifications.

SEND QUICKMAIL COUPON No. 64 FOR YOUR FREE COPY of our new 32-page R and L Turning Tool Manual. It describes R and L Tools in detail and shows many interesting uses for these versatile tools.

Nicetown, Philadelphia, Pa.

Have You Seen It IN ACTION?

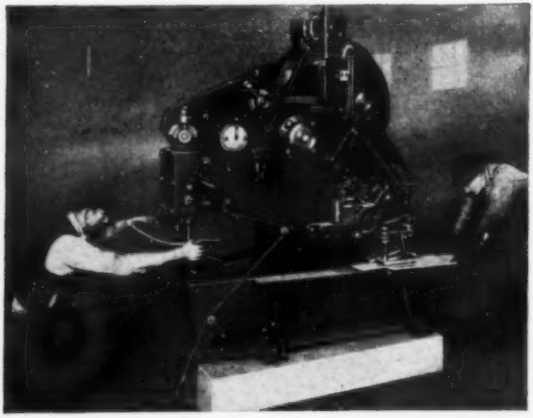
The "Buffalo" UNIVERSAL IRON WORKER

IT'S a genuine pleasure to see these industrial giants "do their stuff"—3 operations at once if you wish—punching, shearing, trimming. Angles, tees, rounds, squares, flat steel—all taken in their stride, without hesitation.

Does performance like that reduce production costs? Well, we wish you could see the records in the hundreds of modern industrial plants where "Buffalo" Universal Iron Workers have replaced obsolete methods of iron working.

There are a wide range of sizes, all built with electrically welded armor plate frames. Also available with built-in notching and coping device.

Send Quickmail Coupon No. 8 for details and Bulletin 331.



BUFFALO FORGE COMPANY

161 Mortimer St., *Branch Engineering Offices in Principal Cities* **Buffalo, N. Y.**

IN CANADA: Canadian Blower & Forge Co., Ltd., Kitchener, Ont.

Look'em All Over!

"PIONEERS IN GROUND THREAD CHASERS"

THREAD TROUBLES STOP WHEN J&L DIES BEGIN

The J&L Tangent Dies are particularly adapted to long runs. They are hardened and ground throughout—precision tools giving precision results. The ground thread Chasers may be removed and reset accurately and more easily than any other long life threading tool. They are guaranteed to cut threads of a Class 3 fit.

Only one set of Chaser holders is required for any right-hand thread within the Die capacity regardless of diameter or pitch.

SEND QUICKMAIL COUPON #9 FOR CATALOG

JONES & LAMSON MACHINE COMPANY

SPRINGFIELD, VERMONT, U. S. A.

inexperienced LABOR MAKES FINE CASTING

Look'em All Over!

5 HP. Model complete, $268.50

Then Check Queen City Grinders and Buffers Against Higher-Priced Competitive Makes

Compare the mechanical features . . . give everything the closest scrutiny. Note that Queen City motors are heavy duty ball bearing Induction—not slower speed split-phase motors. Queen City motors are not overrated—they deliver the full rated power.

Try a Queen City for 30 days. If you're not entirely satisfied, just return it—that's all.

Compare These Prices:

⅓ hp.	$ 29.50
1 hp.	112.50
2 hp.	168.50
3 hp.	218.50
5 hp.	268.50

All Queen City Grinders are equipped with high grade Carborundum wheels at no extra cost.

The 3 and 5 hp. models have shatterproof glass eye-shields—1 hp. and larger models have provision for hooking up to exhaust systems. These are just a few of the many superior features.

Quickmail Coupon No. 32 will bring you the whole story

QUEEN CITY MACHINE TOOL CO.
CINCINNATI, OHIO.

Inexperienced LABOR MAKES FINE CASTING

ON THIS REVOLUTIONARY NEW MACHIN

Small Investment · Less Cost · More Prof

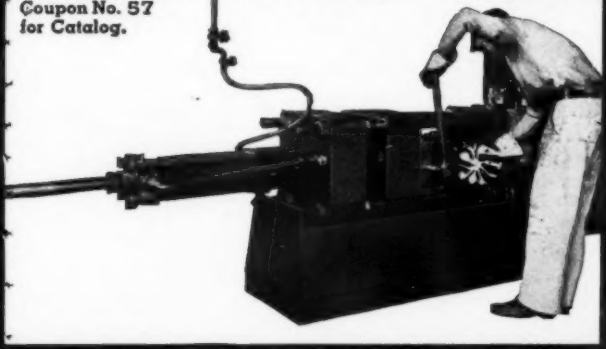
DIE-BUILDING AND TESTING SERVICE

We are fully qualified to build and thoroughly test dies for any part or group of parts, enabling you to get clean, accurate castings, with no production loss. Send Quickmail Coupon No. 57 for Catalog.

The Harvill is the solution of th in-the-plant die casting problem It costs about half as much as othe pressure die casting machines c equal capacity. Eliminates havin to pay a profit to outside caster and uncertain delivery. Produce fine castings in enormous quanti ties at minimum cost. Can be oper ated by an ordinary workman Check up your casting costs—ther compare them with Harvill's. Ou engineers will submit estimates— write today—no obligation.

H. L. HARVILL, INC.

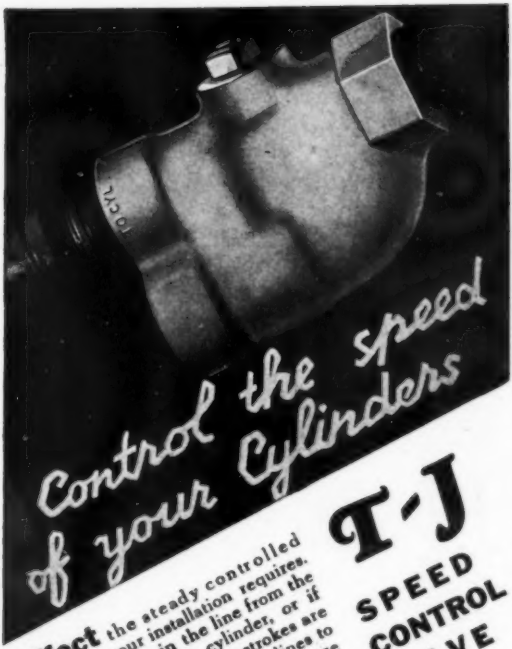
2344 E. 38th St. Los Angeles, Cali



HARVILL

HIGH-PRESSURE

CASTING MACHINES



T-J SPEED CONTROL VALVE

Effect the steady controlled stroke that your installation requires. Pipe one of these in the line from the operating valve to the cylinder, or if both the forward and reverse strokes are to be controlled, pipe one in the lines to both ends of the cylinder. These valves are available in 1/4", 3/8", 1/2", 3/4", and 1" I.P.S.

Write for Bulletin No. SC-1 With Quickmail Coupon No. 14

THE TOMKINS-JOHNSON CO.
605 N. Mechanic St.
Jackson, Mich.

1905 Strand 1937

FLEXIBLE SHAFTS

FLEXIBLE SHAFTS AND MACHINES

TYPE VC 2–4

Quality Equipment Only

FLEXIBLE SHAFT MACHINES OF MANY TYPES AND SIZES

FOR HUNDREDS OF VARIOUS OPERATIONS

LET US KNOW THE KIND OF A JOB YOU WANT TO DO. WE WILL FIT A MACHINE PROPERLY FOR THE WORK.

OVER THIRTY–TWO YEARS IN THIS INDUSTRY

TYPE MP5

Exclusive Manufacturers

Flexible Shafts, Machines and Attachments

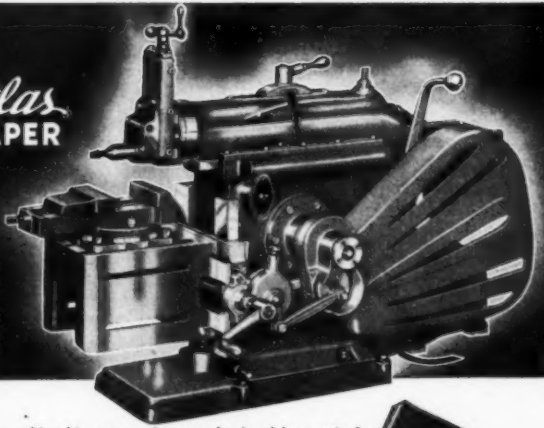
Send Quickmail Coupon No. 26 for catalog

N. A. STRAND & CO.

CHICAGO

5001-5009 N. Wolcott Ave.

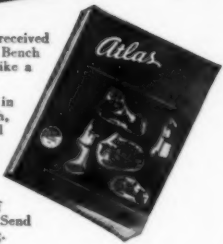
Almost an Avalanche of Letters Came with its Announcement



No one thing this company has ever developed has received such a tremendous ovation as this new precision 7" Bench Shaper. Letters asking for more information read like a roster of American big business.

All the features of larger machines are embodied in this new Atlas—precision, power, rugged strength, and more versatility—at a price that sets a new standard of value in metal shapers. The drive is standard bull type powered by V-belts from motor to spindle. There are four speeds between 45 and 200 strokes a minute, five surface feeds in either direction.

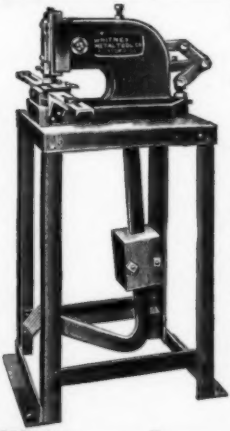
We want every executive concerned with problems of tool room and shop to know about this new Shaper. Send Quickmail Coupon No. 34 for new 1938 Catalog.



ATLAS PRESS CO., 1250 N. Pitcher St. Kalamazoo, Mich.

Factory Displays at: **Chicago**—35 E. Wacker at Wabash
New York—130 W. 42nd St. **Philadelphia**—113 N. Third St.

Atlas QUALITY SHOP EQUIPMENT Since 1911 ATLAS PRESS CO. KALAMAZOO, MICH.



WHITNEY

World's Leading Manufacturers of Punches & Shears

Whitney Foot Press

Made in two sizes, with 7-inch or 10-inch throats. Capacity is 2-inch hole in 16 gauge iron. Height of throat in either model is 4 inches. Ram adjustment is ¾-inch, with 1-inch punch hole in ram.

Stroke of ram is 1 inch. Two-angle notching punch and die is furnished with each machine at slightly higher cost.

Whitney Jensen Portable Brake

Bench type can be easily converted to floor type machine by adding a sub-base.

A combination bending and box brake specially adapted for air conditioning and ventilating work, where bending and forming must be done at the job. Both bench and floor types are easily taken from shop to job.

Send Coupon No. 42 for complete Whitney catalog.

WHITNEY METAL TOOL COMPANY
ROCKFORD ILLINOIS

16" x 8' South Bend Quick Change Gear Underneath Belt Motor Driven Precision Lathe on a manufacturing operation.

THE new 16-inch South Bend Series "T" Lathe, with its double wall apron construction, heat treated headstock spindle, and powerful, quiet underneath belt motor drive is the most popular modern lathe for the manufacturing plant, machine shop, and tool room. The lathe has precision for tool and gauge work, rigidity and power for duplicate manufacturing operations, and versatility for the many jobs in the machine shop. An all-around lathe at a price the smallest shop can afford.

68 Sizes and Types of Lathes for every purpose.

9" lathe prices start at $297
11" lathe prices start at $371
13" lathe prices start at $448
25" lathe prices start at $544
16" lathe prices start at $642

Send Quickmail Coupon No. 78 for

BULLETIN

Bulletin No. 16-C illustrates, describes and prices the different models of the 16-inch lathe. Copy sent free, upon request.

SOUTH BEND LATHE WORKS

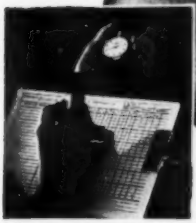
195 East Madison Street, South Bend, Indiana, U.S.A.

SOUTH BEND *Precision* LATHES

MODERN LATHES FOR MODERN INDUSTRY

Save time and muscle *with* KELLERFLEX

Complete details and literature will be sent at the request of any interested executive.



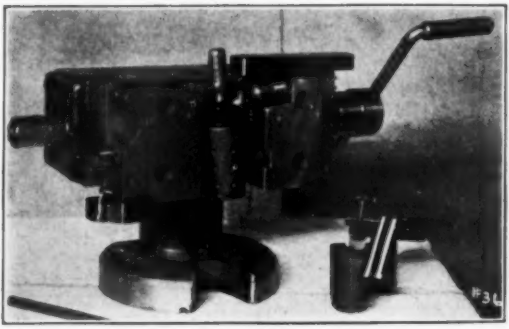
Go out in your own shop and look over the hand work being done. Make a time study of it. Then try Kellerflex Flexible Shaft Machines and see the many hours of time and energy they save. These powerful, accurate little machines, and the hundreds of convenient attachments for them, make hand filing and "muscle" finishing obsolete. They do better work—and much more of it. They pay for themselves quickly, many times over. For power finishing there is no finer equipment than Kellerflex.

Quickmail Coupon No. 66 will bring a bulletin on Kellerflex Machines.

PRATT & WHITNEY

Division Niles-Bement-Pond Co. **HARTFORD, CONN.**

Keep Your Drill Jigs On The Drill Press... Change Jaws As The Jobs Comes Along.



Why waste time and money building separate bases and clamping screws for all of your Drill Jigs?

"JOHN'S" Jig provides a common base with quick clamping screws for all your future Drill Jigs—saving at least 50% of your tooling cost, and giving you quick action, rigid clamping, perfect visibility and plenty of chip room.

Use Coupon No. 75 and let us tell you all about it.

Heuser Manufacturing Co.

1638 N. PAULINA ST., :-: CHICAGO, ILL.

PRECISION GRINDING

Die Grinding at Dominion Drop Forge Company

HASKINS HS-4
SIX SPEEDS

Haskins Equipment meets all demands . . . for precision work . . . for increased production and lowered costs . . . for portability and flexibility . . . for ability to "stand-up" under "pressure" . . . for quality and long life.

If you are Grinding, Sanding, Filing, Cleaning, Wire-brushing or Polishing — *investigate* Haskins money and labor saving equipment.

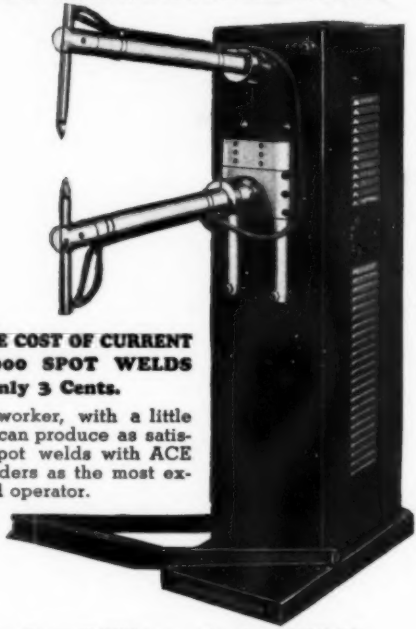
Use Quickmail Coupon No. 22. It will bring you catalog—full of valuable information.

R. G. HASKINS CO.
4654 W. Fulton St.
CHICAGO

Haskins
FLEXIBLE SHAFT EQUIPMENT
with Greater Adaptability

ACE SPOT WELDERS

FOR ECONOMICALLY FASTENING OR JOINING ASSEMBLIES OF SHEET METAL OR WIRE. CHEAPER, FASTER AND BETTER THAN RIVETING.



AVERAGE COST OF CURRENT FOR 1,000 SPOT WELDS Only 3 Cents.

Average worker, with a little practice can produce as satisfactory spot welds with ACE Spot Welders as the most experienced operator.

Sizes from 5 KW up, priced at $90.00

Also motor-driven welders, variable speeds, 60 to 120 strokes per minute.

Send Coupon No. 48 today for full details and possibilities of increasing your profits with ACE Spot Welders.

PIER EQUIPMENT MFG. CO.

WELDING EQUIPMENT DIVISION

629 Cross Street, Benton Harbor, Michigan

The REASONS WHY Putnam Tools Cut Faster—Last Longer

At right— Putnam End Mills being blasted with fine steel shot.

Below— The Homo Electric Furnace.

TEMPERED and FINISHED By the Most ADVANCED METHODS

EVERY step in the manufacture of Putnam Tools reflects up-to-the-minute efficiency. After hardening in salt baths of graduated heats, Putnam Hi-Speed end mills, counterbores, reamers and special tools are tempered in a Homo Electric Furnace in which a correct and constant temperature is always maintained. When removed from the tempering furnace, they are finished in a special blasting chamber with minute particles of steel shot. Methods such as these—in addition to the use of the finest high speed steel, and the employment of the most precise workmanship—assure *you* of cutting tools that are unsurpassed in dependable performance.

Quickmail Coupon No. 67 will bring you our catalog listing complete information and prices on the entire line of Putnam Tools.

PUTNAM TOOL CO.

2983 CHARLEVOIX AVE. DETROIT, MICH.

WATCH FOR THE

COMMENCING with the February issue, The BLUE BOOK will adopt a larger page size—5¼" x 7¾", giving over 80% more display space with only a slight increase in advertising rates.

The BLUE BOOK will continue to deliver the *most* value for your advertising dollar. Its complete and effective coverage of the Machine Tool Field gives lowest cost sales.

Send Quickmail Coupon No. 16 for details of low rates and analysis of circulation.

LOOK FOR THE BIG

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Read What They Say:

PACKARD MOTOR CAR COMPANY, Detroit, Mich.—"This book has enabled us to locate sources of material that we require and it also keeps our mechanical department acquainted with new developments." —*J. C. Ralston, Buyer.*

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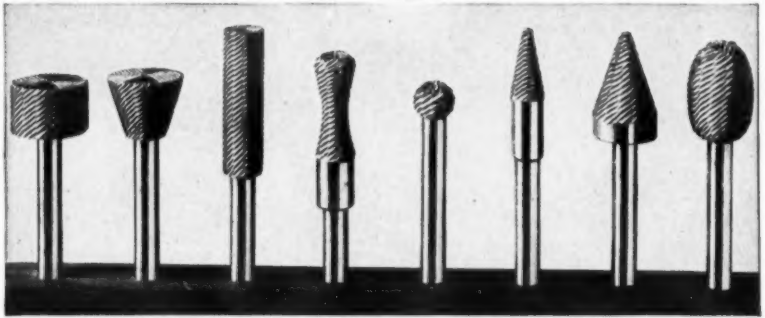
NEW FEBRUARY ISSUE

FORD HAND CUT ROTARY FILES



Just a few of the many standard shapes which are carried in stock
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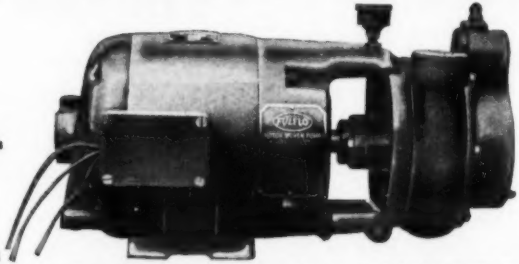
TRADE MARK
"FULFLO"
REG. U.S. PAT. OFF.

CENTRIFUGAL COOLANT PUMPS



The Pumps of well balanced design and construction. They can be mounted in any position and perform to perfection.

Regardless of grit and chips centrifugal pumping action insures dependable flow of cooling solution at all times.

Specifications:- Choice of either ¼-⅓-½-¾ H. P. splash proof motor with enclosed ball bearings. For standard voltage or current. Pumps deliver from 25 to 70 gal. per minute at 10 ft. head. Cast iron body with bronze impeller. Either straight or priming cover. Spring tension packing. No bearings in pump.

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Dependable Precision and Satisfactory Performance

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Milling Machines
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Save TIME—TAPS—TROUBLE with a MASTER TAPPER

CUTS direct labor of hand tapping by requiring only one-fifth of the time.

ELIMINATES waste of valuable time by highly paid skilled men attempting to tap holes accurately by hand.

DOES AWAY with tap breakage, enabling the use of high speed ground thread taps at lower cost than carbon taps.

Change taps in 5 seconds with quick changing adapters. Long spindle avoids need of tap extension for work with inconvenient projections. Two sliding parallel bars hold work in place while tapping. Spindle and bushings are hardened, ground and lapped to gage fit, making this a lifetime tool.

Capacity ⅞" N. C. & N. F.

Order a Master Tapper for 10-day free trial.

Quickmail Coupon No. 58 will bring you complete information.

PAT. APPLIED FOR

THE MASTER TAPPER CO.

272 Central Ave., Newark, N. J.

There's One Near You

In every major industrial city, sixteen in all, there is a Federal branch office or sales agency ready to give you specialized co-operation on your precision measuring requirements.

At Detroit a complete stock of instruments and parts is maintained as well as a complete repair service, which complements the same service rendered from Providence.

Avail yourself of the services of the nearest representative.

There is a type for every requirement. Send for Catalog.

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FEDERAL DIAL INDICATORS and GAUGES

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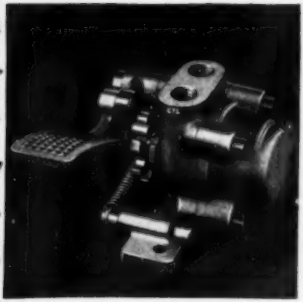
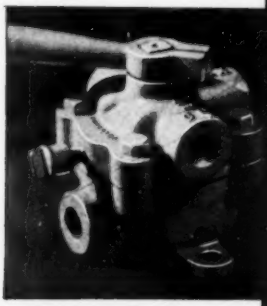
NOPAK

3 and 4-Way Operating Valves

FOR AIR, WATER AND O



3 and 4-Way Foot Operated



3 and 4-Way Hand Operated

The flat disc type design incorporated in the NOPAK valve permits uniform lapping of the disc and seat, allowing continual operation to actually improve the sealing surfaces.

NOPAK valves utilize the pressure to seal the valve at all times, are easy to operate, provide positive action, and full pipe area through the valve.

- **No Packing**
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- **Leakproof**
- **Protected Dis and Seat**
- **Quick or thr tling action, desired**

WRITE for Bulletin

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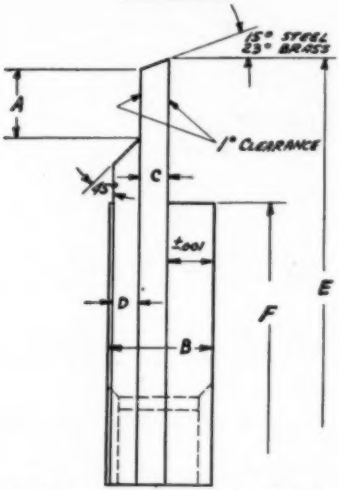
GALLAND-HENNING
MANUFACTURING COMPANY
2753 South 31st Street Milwaukee, Wisconsin

STOCK CIRCULAR CUTOFF TOOLS



These tools are made of Special High Speed Steel hardened, ground all over, and ready for use.

The 45° V angle on the "D" dimension is intended to break a corner or form down to start a box tool turn or thread.

These tools are primarily for use on B & S Automatic Screw Machines but are adaptable to many other machines.

The various dimensions of length "A" give these tools a wide range.

Send Coupon 69 for a complete list of sizes and prices, also for description of standard chamfer tools.

Banner Manufacturing Co., Inc.
1873 Clybourn Ave., CHICAGO, ILL.

EARN BIGGER DIVIDENDS

with

Mall PORTABLE FLEXIBLE SHAFT EQUIPMENT

Heavy and light duty models for every GRINDING, POLISHING and SANDING application.

It will pay you to investigate these quality-improving, labor-saving tools.

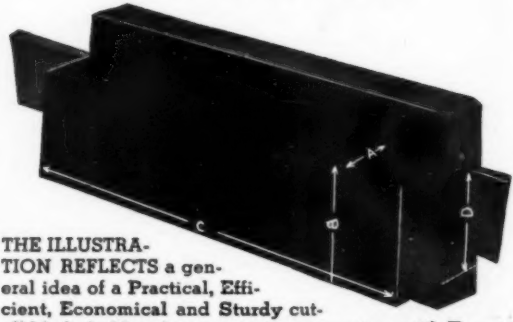
Send Quickmail Coupon No. 46 for bulletins describing the various models!

MALL TOOL COMPANY

7742 South Chicago Avenue
Chicago, Illinois

Offices and Distributors in all Principal Cities

THE FAMOUS
Four-Grip Rigid Cut-Off Blade Holder



THE ILLUSTRATION REFLECTS a general idea of a Practical, Efficient, Economical and Sturdy cut-off blade holder, for service in connection with Turret Lathes and Manufacturing Lathes equipped with a Four-Way turret on the Cross Slide. Additional cut-off blade holder for other applications.

Lathe bit holders, for standard commercial, Stellite and similar alloy and Tungsten-Carbide tipped bits.

Vertical Boring Mill bit holders for surface, boring and outside turning operations are also suitable for Universal Turret Lathes and Manufacturing Lathes.

Shaper and Planer combination and Goose Neck type bit holders have no Equal.

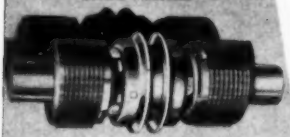
Send Quickmail Coupon No. 50 for full information.

FOUR GRIP TOOL CO.
107 E. 17th St., Paterson, N. J.

SINGLE PULLMORE

Pullmore Clutches are made in single and double types, for operation in oil or dry, in capacities from 1 h.p. to 75 h.p. at 500 r.p.m.

DOUBLE PULLMORE



PULLMORE

Clutches in Prominent Industrial Products Shown in Pullmore BLUE BOOK

New booklet, now available, contains complete information on sizes, dimensions and capacities of Pullmore Clutches; drawings of typical applications; 20 illustrations of equipment using Pullmore Clutches; brief information on Rockford Over-Center Toggle-Type and Spring-Loaded Clutches. Here is a useful handbook for engineers, designers, purchasing agents and others responsible for reliable, efficient, low cost power transmission and control.

Pullmore Clutches are used as main drive clutches carrying all the load; as auxiliary clutches controlling individual units; and in power take-off mechanisms to operate various attachments. Pullmore Clutches engage smoothly; operate efficiently over long periods without attention. Adjustments can be made quickly and easily when this eventually becomes necessary. Complete data are available in the Pullmore Blue Book.

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SHORT - MEDIUM - LONG

★ ★ SCULLY-JONES Turret Tool Holders, Sleeve type and Extension type are designed for use on Turret Lathes and Screw Machines.

★ ★

Send Quickmail Coupon No. 40 for a catalog of Scully-Jones equipment

SCULLY-JONES & COMPANY

1905 SOUTH ROCKWELL STREET • CHICAGO, ILLINOIS

It's the PRINCIPLE that insures ABSOLUTE ACCURACY

STANDARD'S DIAL BORE GAGE

is designed to measure diametrically through the center of the bore, which is the recognized principle for correct measuring.

Two centralizing plungers, one on either side of the live gaging member automatically locate gaging points true with centerline of bore.

UTILITY—Developed to meet the demand for accurate checking of bore dimensions both in quantity production and in individual pieces.

ADAPTABILITY—Unique construction enables measurements to be made within one quarter of an inch from bottom of blind bores—applicable to holes with obstructions such as shoulders, webs, undercuts, etc. Extensions are available for deep bores.

WIDE RANGE—of adjustment—only seven gages are required to cover a range from 1" to 12½".

QUICK PRECISION—Setting requires but a few moments. The Dial Indicator is graduated in .0001" and enables operator to estimate within .000025".

"For better gaging come to Standard"

Quickmail Coupon No. 38 will bring your free copy of the new catalog covering the complete line of Standard Production Gages.

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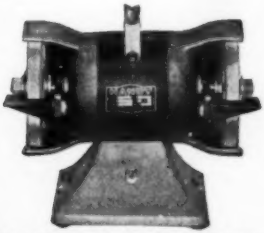
BALL BEARING GRINDERS

A Complete Line—6" to 12"

Bench and Pedestal types. Built for HEAVY DUTY. 1-YEAR GUARANTEE Prices range from $19.50 to $208.00



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BALDOR ELECTRIC CO.

4368 Duncan Ave., St. Louis, Mo.

BALDOR GRINDERS

are built by Motor Specialists

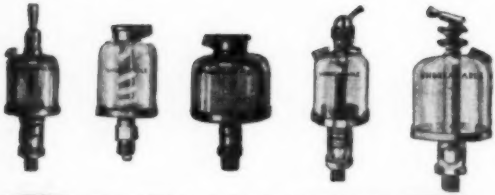
Dependable

Dependability, long life, fast cutting accuracy is built into each WELLS Metal Cutting BAND SAW. It's the perfect shop saw—completely flexible in operation for cutting all metals into any shape desired. Its easy portability enables placement at any position in the plant—facilitating maximum shop efficiency. Send Quickmail Coupon No. 31 for full particulars on this time and labor saving saw.

No. 8 SIZE
8 in. diameter round or 8 in. by 16 in. flat.

No. 5 SIZE
5 in. diameter round or 5 in. by 16 in. flat.

WELLS MFG. CORP. Three Rivers, Michigan



IF IT'S A GITS OILER IT OILS . . .

No matter what the requirements, you'll find a sturdy, dependable GITS Oiler for every lubrication need— reflecting more than a quarter century of progress in lubrication engineering.

Hope you'll avail yourself of this long experience—tell us your particular lubrication problems—and let us prescribe oilers especially adapted for your service, without any obligation on your part.

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GITS BROS. MFG. CO.

1860 South Kilbourn Avenue, CHICAGO, ILLS.

HITCHCOCK'S
Machine Tool
BLUE BOOK

Selected Circulation — 25,000 Monthly

DECEMBER, 1937 — THIRTY-SECOND YEAR

The Business Trend

The index of machine tool orders in October stood at 152. This shows a decrease over previous months this year, but is as high as the best months in 1936 up to December.

Dun's Review for November says that evidence of a fundamental weakness has not appeared, but the nervousness visible in security and commodity markets is apparent in industry to some extent, and buying is more conservative.

The Babson Reports of November 18th say they are convinced that the stock market has overdiscounted any temporary decline in business they can see ahead, and they feel that the first quarter of 1938 will see business turn up again. They place business at 59% above depression low.

Published By

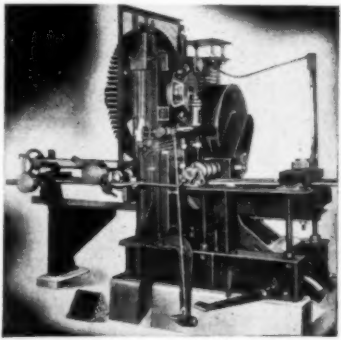
Hitchcock Publishing Co.

508 S. Dearborn St., Chicago, Ill.

Consult the Classified Finding Index for your requirements

The Buffalo Automatic Shear

Designed for continuous shearing of bar stock for bolts and rivets, this unit is equipped with automatic feed rolls which are driven direct from the intermediate shaft of the shear. The rolls are made to grip and pull the stock into the shear only when the knives are open on the "up" stroke, and to release their grip the instant the stock touches the rear gauge and the top knife starts to descend. This is said to prevent scoring or marking of the stock by slipping rolls under pressure.



A specially designed roll automatically adjusts itself to any ordinary irregularities in the bar stock. Three bars are fed and sheared at one time at a shearing rate of 30 strokes per minute, giving a total production of over 5000 pieces per hour.

An open-side tilting type gauge is provided at the rear of the machine, and is easily adjusted for any length of bolt up to 18 inches for automatic feed and 48 inches for hand feeding.

A special cropping gauge is also furnished for cutting an inch from each bar at the start of a run to provide a square end and remove the ragged mill cut. This gauge automatically moves out of the way after the first cut, permitting the stock to continue against the regular gauge.

An automatic stop is employed to disengage the clutch on the shear when the end of stock bars reach the feed rolls. This is an electrical device, adjustable in a manner that permits salvaging of any predetermined length of ends.

The clutch may be engaged either by hand lever

(Continued on Page 48)

DO IT—

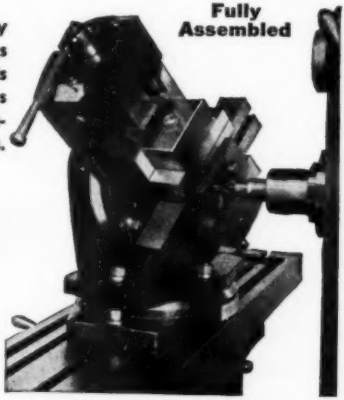
Better—Faster—for Less!

with ODIN UNIVERSAL

Precision Vises
Swivel and Plain

with Interchangeable Jaws and Hardened and Ground Parallels

Fully Assembled



They quickly pay their costs in savings on High Tool Costs —Expensive Fixtures —Patterns and castings—Extra Set-Ups.

Investigate the money saving possibilities of ODIN VISES

Send Quickmail Coupon No. 71 for full facts and prices.

Let us show you how to make cheaper and better jigs and fixtures at a greatly reduced cost—with a great saving in time.

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CHICAGO

Sales Division
110 S. Dearborn st.,

Telephone
Franklin 3281

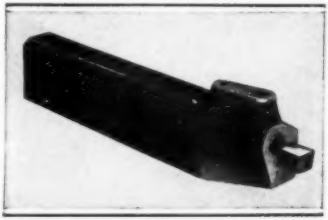
or foot pedal. It is arranged to disengage automatically after each stroke or to run continuously until disengaged by the automatic stop governed by the length of the bar stock.

The motor is mounted on top of the shear frame and V-belts transmit power to the flywheel. Gears, belts and motor pulley are enclosed within expanded metal guards.

These machines are built in a variety of sizes and capacities. Buffalo Forge Co., 161 Mortimer St., Buffalo, N. Y., will gladly send you further information, and if you submit your requirements, they will recommend the proper equipment for your needs. Write them on your business letterhead.

New Four-Grip Holder for Carbide-Tipped Bits

A new tool holder has been developed by the Four-Grip Tool Co., 107 E. 17th St., Paterson, N. J. specifically for use with carbide-tipped and Stellite tool bits. The socket hole of this Type TC holder is broached to an angle of 2 degrees especially to accommodate tool bits of the types mentioned, whereas holders for high speed steel bits are broached to an angle of 15 degrees. The new holder is designed to provide the high degree of rigidity essential in the use of brittle cutting alloys.



The makers will gladly send you any further information desired on any of the Four-Grip holders. Write them on your business letterhead.

Dumore Expands Factory

The Dumore Co., Racine, Wis., announce a $10,000 addition to its factory, providing an addition of 640 square feet to the paint spraying and baking departments. Completely fireproof and air conditioned, this new building gives Dumore thoroughly modern and up-to-the-minute painting facilities.

REMOVE STAINLESS STEEL WELDS EASIER, QUICKER

with **SKILSAW DISC SANDER**

Let this new streamlined SKILSAW Disc Sander save you considerable time, labor and money on all grinding, sanding and polishing operations now done by the slow, costly hand method. It incorporates everything that is new and improved in portable tool design and construction. Fast and powerful in operation . . . comfortable and easy to handle and control. Used for flat, concave and convex surfaces of metal, wood, stone, marble, tile and compositions. Two powerful models— for heavy duty and constant production service.

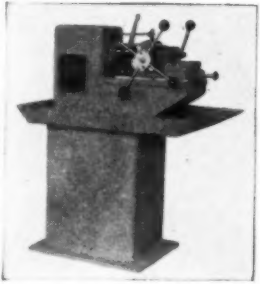
See them at your distributor's and send Quickmail Coupon No. 23 for our new complete catalog.

SKILSAW, INC. 3318 Elston Ave., Chicago

214 E. 40th St., New York—52 Brookline Ave., Boston—1429 Spring Garden, Philadelphia—312 Omar Ave., Los Angeles—2063 Webster St., Oakland.

Geometric Develops New Threading Machine

Designated as the "No. 14" threading machine, a newly designed unit is offered by The Geometric Tool Co., New Haven, Conn., for the precision threading of duplicate parts.



Compact, light in weight and moderately priced, the machine, it is said, will cut standard pitches up to 9/16 inch and fine pitches in the larger sizes. Either a Geometric style KD die head with conventional milled or tapped chasers, or the style TR Geometric die head with tangent or circular chasers may be employed.

An interesting feature is the wide range of holding devices possible. The Geometric Tool Co. furnishes either a standard two-jaw vise or a standard collet chuck. For simple jobs the user may purchase the machine without a work holder, mounting his own design of holder on the machine platen.

The standard vise and the standard collet chuck are equipped with an adjustable alignment feature that is claimed to be unique. Pivoted on large bolts, vertical and horizontal adjustment of the work holder may be made readily without the use of gibs or shims.

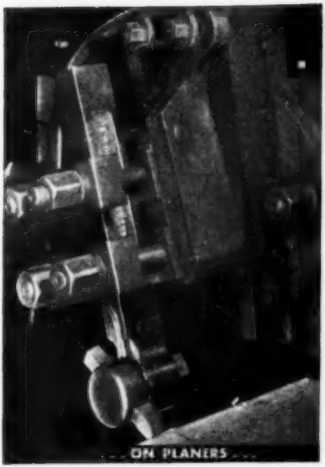
The machine is shown equipped with the standard two jaw vise. Directly back of the turnstile is shown the automatic work gage which indicates the proper setting of the work, then swings out of the way as the work is tightened in the vise.

The work spindle and drive shaft are made of special alloy steel, hardened and ground, and are mounted on Timken roller bearings. Pickoff change gears permit a wide range of threading speeds—a desirable feature when threading different diameters and many different materials.

(Continued on Page 52)

ARMSTRONG

TRADE MARK REG. IN U.S. PAT. OFFICE



You can't ignore savings of "All Forging, 70% Grinding and 90% High Speed Steel"

There still are occasional "old timers" who from habit forge tools from bars, but you who are concerned with tool costs, with operating costs and profits, can't pass over the savings offered by the Armstrong System of Tool Holders.

Comprising over 100 sizes and shapes, the System provides ARMSTRONG TOOL HOLDERS for every operation on lathes, planers, slotters and shapers . . . for the unusual as well as the usual operations. Each is a permanent, multi-purpose tool that does the work of a complete set of forged tools, that saves the costs of "tool dressing", reduces "tooling-up" to the selection of a cutter and tightening of a screw, and ends need for stores of costly tool stocks and loss in heavy tool stumps. These are savings no man interested in costs and profits can ignore on *any* operation.

If you are still forging tools, send Quickmail Coupon No. 6 for the B-35 catalog. It will point out how to apply the saving Armstrong System.

Buy ARMSTRONG TOOLS from your Supply House

Armstrong Bros. Tool Co.

"The Tool Holder People"

308 N. Francisco Ave., Chicago, U.S.A.

Eastern Warehouse & Sales: 199 Lafayette St., N. Y.
San Francisco, London

Driven by a double V-belt drive from motor mounted in the base, the machine requires little floor space, and all controls and working parts are readily accessible. An automatic reversible type pump supplies an ample amount of coolant.

Write direct to the makers for further information, using Quickmail Coupon No. 33.

A New Metal-Cutting Band Saw By Delta

Intended for a wide range of general shop cutting operations, a new metal cutting band saw developed by Delta Mfg. Co., Milwaukee, Wis., should prove useful for all-around purposes.

The saw is of 14 inch capacity and will cut materials up to 6 inches thick. An extension attachment increases the capacity under the guide to 12 inches when necessary.

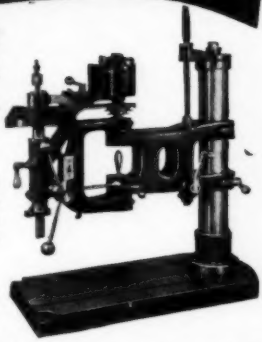
Five speeds are provided — four for metal (125-175-250 and 340 feet per minute) and one for wood (2200 feet per minute). The slow speeds are obtained through a ball bearing gear box and the higher speed for wood is direct from the motor by a V-belt drive. Change-over from low to high is easily accomplished. The machine is ball bearing equipped throughout, with New Departure self-sealed bearings which do not require lubrication.

The unit will be found especially useful for cutting templates, for experimental work, for sheet-metal sawing, sawing jig and fixture bases and similar parts, fitting light structural sections and extruded shapes, trimming gates in iron, brass and aluminum, sawing plastics and for many similar purposes. Thus, it is recommended for toolroom, machine shop, pattern shop, ornamental metal shop or foundry and general industrial applications.

Write direct to the manufacturers for full information.

A Time Saver In Any Shop

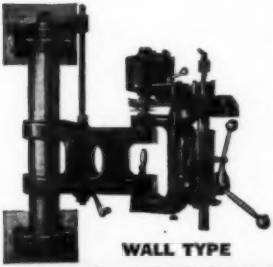
AYER SENSITIVE BENCH RADIAL DRILL



A rugged, modern, ball bearing sensitive drill with all the advanced features are found in this high class tool.

Sensitive balance of spindle at all speeds is provided by long extension spring within drill frame. Depth gauge and graduated sleeve are also provided.

Drill capacity ½"; minimum distance spindle to column 6"; maximum distance 31½"; minimum distance spindle nose to base 4"; maximum distance 21"; spindle travel 5"; spindle bore Morse No. 2; high grade geared ½" chuck furnished in place of Morse Taper if preferred.



WALL TYPE

Furnished in either bench or wall types. Spindle can be equipped with tapper and motor equipped with reverse switch also motor bracket is located for larger or different make motors.

Quickmail Coupon No. 15 will bring you full information and low prices.

Choice territory open to progressive dealers.

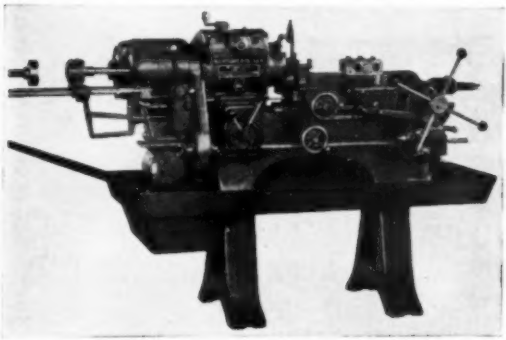
F. H. AYER MFG. CO.,
CHICAGO HEIGHTS, ILLINOIS

A New Turret Lathe By Bardons & Oliver

The No. 2 geared electric turret lathe offered by Bardons & Oliver, Inc., Cleveland, O., to meet the demand for a high speed unit of small capacity is simple in design yet has the modern features of high production machines of larger size.

Such a lathe with a capacity of a one inch round bar through the spindle is said to be especially suited to the machining of brass, aluminum and other non-ferrous materials as well as steel and small iron castings.

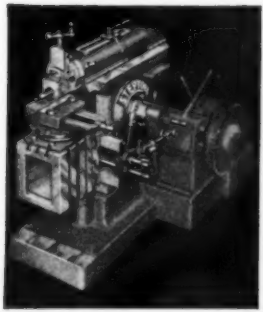
Design of the head centers about a standard frame, high torque quick reversing motor, flange-mounted to drive the train of hardened alloy steel gears sliding on alloy steel splined shafts mounted on anti-friction bearings. Reversing is accomplished electrically. All clutches have been eliminated and revolving parts have been lightened to reduce inertia, which increases the number of reversals possible per minute. With no slipping of belts, all pulleys, idlers and guards have been eliminated. Gears and shafts are balanced to give vibrationless performance at high speed.



Spindle is mounted on a straight roller bearing in front with a radial and a thrust ball bearing in the rear. The spindle has an American standard 6 inch

(Continued on Page 56)

POWERFUL MACHINES
for HEAVY WORK



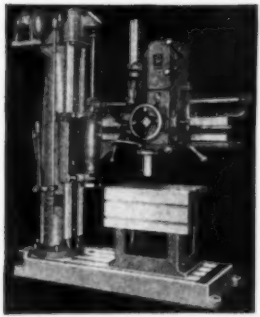
STEPTOE SHAPERS

Force feed continuous lubrication, heavy construction and Timken bearings throughout insure rigidity, accuracy and long life. Centralized controls are within easy reach of the operator at all times.

Instantaneous feed and speed changes may be made with fingertip control while the machine is running.

Send today for catalog No. 130.

WESTERN 12-SPEED RADIAL DRILL



Twelve geared spindle speeds of 40 to 2000 r. p. m. adapt this solidly - built, easily - controlled drill to small drilling and tapping jobs as well as to heavy-duty milling and spot-facing operations.

Simple, centralized controls within easy reach of the operator, ball bearings throughout, instantaneous speed and feed changes and easy swinging head make accuracy a commonplace.

Twin disc clutches, 6 geared feeds and elevating mechanism fully enclosed and running in oil contribute to easy, dependable operation.

Write today for your copy of the 12-page circular illustrating features of the Western drill that will save money in your plant.

Western Machine Tool Works

HOLLAND, :-: :-: MICHIGAN

spindle nose and may be equipped with standard hand or air operated chucks.

Six spindle speeds are obtainable with a single speed motor—12 with a two-speed motor. Different speed ranges are available by employing different sets of gears in the head. Gears are shifted by a single lever on top of head. Reversing is effected by a hand lever in front, directly below the head. For the 12-speed head with 2-speed motor, the instantaneous speed changes of 2:1, so necessary for tapping and threading operations, are made with a second lever in front of the reverse lever. The magnetic reversing switch is mounted inside the machine directly back of the hand reversing switch.

Power lines are brought directly into the machine and wiring is neatly enclosed.

The turret slide has an effective motion of 7 inches. The hexagon turret revolves on a large preloaded taper roller bearing which absorbs the thrust. An adjustable clamp ring holds the turret in any of the six positions.

The saddle apron provides six power feeds to the turret slide from .0035 to .033 inches per revolution. It is asserted that this covers all feeds necessary from fine finish on steel to the coarsest feed needed for non-ferrous metals. Feeds are changed by a single lever, and indicated on a plainly visible dial.

A hand pump on side of saddle apron lubricates all important bearing surfaces not reached by the splash system, including slide and saddle ways. Bearing surface on bottom of turret slide and its bearing surface on the saddle are fitted with hardened and ground alloy steel wear strips.

Three different cross slide and cariage units may be had. For average work, such as facing and cutting off steel or cast iron, the cross slide is equipped with hand screw feed. For high speed operation on the softer non-ferrous metals a lever cross slide is used.

A set of disc and latch type stops directly behind the cross slide handwheel quickly duplicate diameters. Longitudinal motion is obtained by the rack and pinion operated carriage. Cross slide and carriage both have large micrometer dials. Tool posts are of the double opening type. By sliding the rear tool post and changing the cutters from one side

(Continued on Page 58)

INCREASE PRODUCTION WITH
FEDERAL PRESSES

TIMKEN BEARING EQUIPPED

No. 33 BACK GEARED

Capacity 26 tons
Large area ram face
Large bolster plate
Large opening thru back for bulky work

Designed and built especially for large or bulky light work and for progressive dies such as used in lamination.

All models of FEDERAL heavy duty presses are equipped with Timken bearings to increase efficiency and production at the lowest possible upkeep cost. Roller bearings in the flywheel are adjustable for wear, eliminating the need for expensive rebuilding and repairs after long use and preventing damage to the clutch and control mechanism. Non-repeat safety type clutch and tripping device, also standard equipment on FEDERAL models, guard against accidents to operators or dies should momentum carry the crankshaft beyond center.

FEDERAL PRESS CO.
ELKHART, IND.

Send Coupon No. 68 for illustrated informative circular

to the other, any length of stock from 0 to the width of the cross slide can be faced and cut off at one setting of the carriage apron.

Two hand operated bar feeding mechanisms are available—the ratchet and the finger types. Dynamic balancing of the automatic chuck assures smooth operation at high speed. The two types of bar feed are interchangeable by making a few changes in the connecting mechanisms. End of the bar stock is supported within an extension tube which swings forward for loading. The bar stands also serve as storage racks for extra bars.

For semi-automatic operation, an electric power operated automatic chuck and bar feed are available, and mounted in place of the regular automatic chuck and bar feed.

Head and bed are cast integrally of close-grained nickel cast iron. Inverted U type cross ribs assure extreme rigidity. A large coolant pump is provided at the head below the sheet steel pan. The coolant pump, driven by a V-belt from the motor shaft has a clutch for disconnection. A complete line of tools and attachments may be had for this machine, for bar work, and for work which must be held in a chuck.

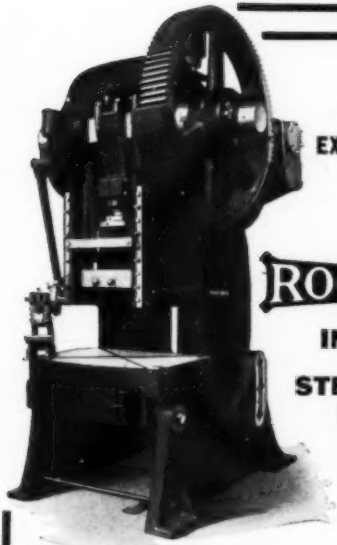
For complete information write direct to the makers, using Quickmail Coupon No. 17.

Taft-Peirce Announces New Magnetic Parallels

The Taft-Peirce Mfg. Co., Woonsocket, R. I., announce an addition to their line of T-P set-up tools. The new magnetic parallels are now available from stock in two sizes:—¾x1½x3 inches and 1x2x4 inches. These parallels are made with alternate laminations of brass and steel, but are magnetically universal in that they may be used on all models of Taft-Peirce superpower magnetic chucks, and in fact on any type of magnetic chuck face plate.

It is understood that another addition to the T-P line will be announced shortly in the form of two sizes of magnetic V-blocks.

Write direct, on your letterhead, to the makers for any further information and please mention The BLUE BOOK.



Built for

EXCEPTIONAL

SERVICE

ROCKFORD

INCLINABLE AND STRAIGHT SIDE PRESSES

in all sizes

THE ever increasing use of heavy sheet metal stampings nowadays in place of castings and the numerous parts formerly made on screw machines, requires presses of greater power and capacity, and that's just what you get in the ROCKFORD.

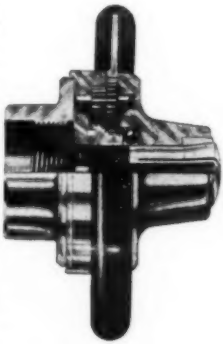
Rockford Presses are sturdily built of the best materials and incorporate many features that are the result of years of experience in building presses of various types. You can depend upon a Rockford—for it is designed to maintain exact adjustment throughout long runs and under heavy duty.

Write for Catalog

ROCKFORD IRON WORKS

ROCKFORD, ILLINOIS

The Sjogren Speed Collet Chuck



The new Sjogren speed collet chuck, shown here, is offered with the assertion that it increases lathe capacity from 25 to 40%. In explanation, it is pointed out that the ordinary collet attachment has a cumbersome draw tube inside the spindle hole. This reduces the lathe capacity. The Sjogren speed collet chuck eliminates this space-wasting draw tube entirely and will accurately hold any bar that can be passed through the spindle.

The Sjogren needs no wrenches or keys. An easy turn of the hand wheel, one way or the other, automatically opens or closes the collet, releasing or gripping the work. The grip is said to be adjustable and sure. Most operators lay a hand on the wheel and run the lathe forward to tighten the collet—reverse to loosen.

Claims for increased production are supported by the assertion that with the Sjogren, the operator is always in front of his work. There's no need to reach over—or to walk back of the headstock—to grip or release the material in the collet.

The cut-away illustration of chuck and adapter plate reveals the construction clearly, showing the closing arrangement which is directly around the collet threads, the precision ball thrust and steel insert for collets. The operating hand wheel is an aluminum casting finished in telephone black baked enamel.

Available in three sizes, the Sjogren speed collet chuck is adaptable to lathes, milling machines, turret lathes, grinders and special production machines.

A four page bulletin giving complete information may be had by communicating with your nearest Sjogren Distributor:—Ray H. Morris & Co., Inc., 7 So. Main St., West Hartford, Conn.; Hardinge Sales Co., Inc., 277 Lafayette St., New York, N. Y.;

(Continued on Page 62)

WITTEK
AUTOMATIC
Roll Feeds

For Every Size and Make of Punch Press

FAST
ACCURATE
AUTOMATIC
SAFE

Prevent Punch Press Accidents

One sudden accident may wreck a year's profits on a particular machine. Protect yourself and your operators by installing Wittek Automatic Roll Feeds. They feed automatically any stock from coils in lengths from 0" to 24" per press stroke and increase production at a saving in time, operating costs and dies. Single roll, double roll and compound type with straightener are easily installed on any make of punch press without alteration.

Wittek Reel Stands

Automatic, Self-Centering, Ball-Bearing. Adjustable to any height, balanced at any angle, 500 lb. capacity. Prompt deliveries from stock. Also made in four other models.

Write today for Bulletin "HF" giving complete details and specifications of WITTEK Automatic Roll Feeds and Reel Stands.

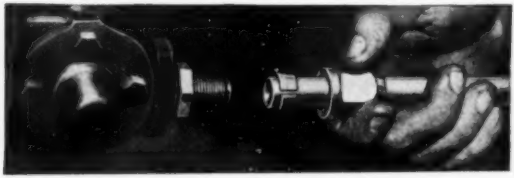
Use Quickmail Coupon No. 25

WITTEK MANUFACTURING COMPANY
4305-9 W. 24TH PLACE . . . . . CHICAGO, ILL.

Wright & Gade Equipment Co., 3701 North Broad St., Philadelphia, Pa.; Hardinge Brothers, Inc., 1418 College Ave., Elmira, N. Y.; W. W. Wentz, 113 Powers Bldg., Rochester, N. Y.; Cleveland Duplex Machinery Co., Inc., Penton Bldg., Cleveland, O.; E. A. Kinsey Co., 331 W. Fourth St., Cincinnati, O.; Iverson & Laux, 544 W. Washington Blvd., Chicago, Ill.; F. A. Darnell, 709 Carlisle Place, Indianapolis, Ind.; National Sales Engineering Corp., 2970 W. Grand Blvd., Detroit, Mich.; Northern Machinery & Supply Co., Lumber Exchange Bldg., Minneapolis, Minn.; Colcord Wright Machinery & Supply Co., 1223 N. Broadway, St. Louis, Mo.; C. H. Gosiger Machinery Co., Bacon & McDonough Sts., Dayton, O.; Moore Machinery Co., 550 Fifth St., San Francisco, Cal.; Eccles & Davies Machinery Co., Inc., 1910 Santa Fe Ave., Los Angeles, Cal.; William K. Stamets, Jenkins Arcade Bldg., Pittsburgh, Pa.

Packless Metal Products Bulletin

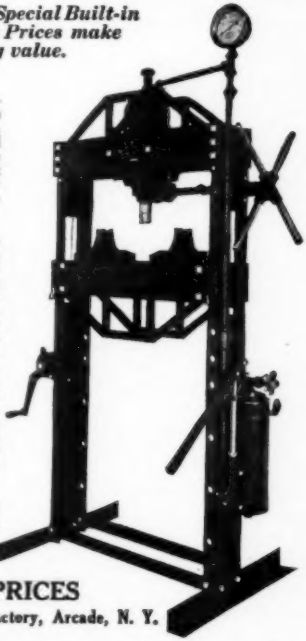
Users of seamless flexible metal hose, copper tubing, couplings, etc., will find much helpful information in Bulletin No. 500 issued by Packless Metal Products, Corp., Long Island City, N. Y. In addition to other products, the Packless self-flaring tube couplings are covered in detail. These couplings, an example of which is shown below, are applied on the job without soldering or brazing. It is said no flaring tools are required as the coupling forms its own flare.



The bulletin includes a dozen comprehensive data sheets bound in an attractive file cover with handy index tab. A copy will be sent to you if you write on your business letterhead and mention The BLUE BOOK.

KRW Hydraulic and Sensitive ARBOR PRESSES

New Improvements, Special Built-in Features and Lower Prices make them an outstanding value.



THE last word in convenience, efficiency and ease of operation. Built extra strong and well braced, with steel trusses electrically welded, these presses will withstand strains that would cause presses of lighter and inferior construction to buckle or collapse.

Hand wheel for sensitive press operations has sliding handles which pull out to the ends for increased leverage. Work does not have to be changed from the work table as is the case with other make presses having a separate sensitive press unit mounted on the side or elsewhere.

The importance of this K R W feature as a time and labor saver can be appreciated. Also there is NO EXTRA CHARGE for this important built-in feature on a KRW Press. Work table can be raised easily with one hand. A strictly one-man Press.

Write for special circular, just off the press, giving full details and specifications of all KRW Arbor Presses.

PRICES

F. O. B. Factory, Arcade, N. Y.

No. 37—35 ton Hydraulic and Sensitive Arbor Press	$150.00
No. 37E—50 ton Hydraulic and Sensitive Arbor Press	180.00
No. 37F—70 ton Hydraulic and Sensitive Arbor Press	300.00

Gauge and fittings, $15.00 extra on all presses.

K. R. WILSON

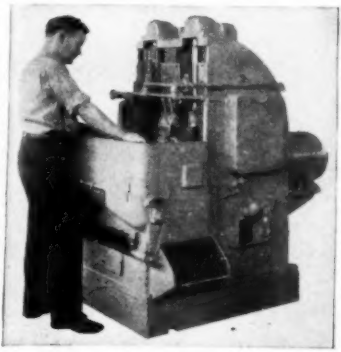
10-16 Lock Street, Buffalo, N. Y., U.S.A.

EXPORT DEPARTMENT
90 West St., New York, N. Y.

WEST COAST BRANCH
722 Mateo St., Los Angeles

Stepping Up Connecting Rod Production

A production of 400 connecting rods and caps per hour is said to have been achieved in an important automobile plant through the use of a continuously operating alternating-cycle dual-ram Colonial broaching machine.



The machine is of the vertical type with an 18-inch stroke and three tons capacity per ram and is used for broaching the joint faces on rods and caps, the rods being done on one ram and the caps on the other.

While the left hand ram is traveling downward broaching the cap, the right hand ram moves upward on the return stroke after having broached a rod. During this up stroke the fixture holding the rod is automatically kicked out sideways and the clamps automatically released, permitting the operator to remove the finished rod and insert another one. Toward the end of this same stroke the part is automatically clamped and the fixture automatically returned to position for broaching. The operations are completely automatic.

The right hand ram travels downward and the left upwards. The same cycle then occurs for the left hand ram, the fixture being kicked out sideways, the part released by the clamps, a new part clamped in the fixture and the latter returned to the broaching position.

The operation is hydraulic throughout, including fixture and clamping operations. About .010" of stock is removed in the operation, with a finished tolerance of only half a thousandth.

(*Continued on Page 66*)

DRILLING MACHINES

FORMERLY manufactured by Rockford Machine Tool Co., of Rockford, Ill.; thousands of these drills have been installed in plants the country over, where they have been giving universal satisfaction.

Counterbalanced, eight-speed spindle, made from high carbon special steel, has quick advance and return; positive feeds are instantly available while machine is in operation; all controls within easy reach.

21"-23" Stationary Head

* * *

24"-28" Sliding Head

* * *

Belt or Motor Drive

Write for Complete Details

POWERFUL—SIMPLE—DURABLE—ACCURATE

We have been builders of Drilling Equipment for more than 20 years and, in addition to the above drills, manufacture the Cleereman Automatically Oiled, Anti-Friction, High Speed Drilling, Boring and Tapping Machines; Gang Drills and Special Drilling Machinery.

CLEEREMAN MACHINE TOOL CO.

GREEN BAY, WISCONSIN

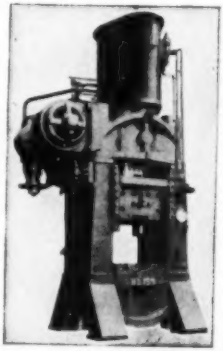
(Formerly Green Bay Barker Machine Tool Works)

It will be noted that the machine is provided with a knee control so that it can be stopped readily at any time even though the operator's hands are busy. In actual practice, the machine is said to operate virtually continuously. The machine occupies small floor space and is only five feet high overall.

For information regarding this or other broaching operations write direct to the Colonial Bushings, Inc., 145 Jos. Campau St., Detroit, Mich.

A New 1000-Ton Bliss Hydro-Dynamic Press

The Hydro-Dynamic Press Division of E. W. Bliss Co., 1420 Hastings St., Toledo, Ohio, announces a new 1000-ton press. In connection therewith, it is said that this new unit applies improved patentable hydraulic principles to up-to-date metal-working requirements and supplements the range and performance of Bliss mechanical and hydraulic presses.



Side frames are keyed to the crown and bed so that the housings rather than the tie-rods absorb torsional strain. A deep slide is guided by long, adjustable gibs of standard approved design. Stiffness of crown and bed are effected by heavy ribs.

Full electric finger-tip control is provided for production operation and for inching, with three speeds forward and high speed return. A high speed, positive advance is provided at 1100 inches per minute; an intermediate pressing speed of 60 inches per minute on pressure capacities up to 250 tons; and a slower pressing speed of 20 inches per minute on pressure capacities over 250 tons. Change from one speed to another is said to be automatically controlled as the pressure increases. The change from

(Continued on Page 68)

DRILL JIG ACME BUSHINGS

ASA

Standardized

Prompt delivery from stock on over 10,900 standard items — over 6700 ACME Standard — over 4200 A. S. A. Standard — all completely finished ready for use. *Special sizes made to order.*

Made in our new plant by the most exacting and scientific methods — insuring accurate fit plus long wear — concentric within .0003" full indicator reading.

Types shown at left, top to bottom, are: plain stationary press fit, type 'P'; shouldered stationary press fit, type 'S'; removable slip, type 'R'.

Send *Quickmail Coupon No. 39* for bulletin containing complete data and low prices. Satisfactory service guaranteed.

ACME
INDUSTRIAL CO.
210 N. LAFLIN ST.,
CHICAGO, ILL.

quick approach to intermediate speed may be governed by the position of the slide, so that the slide will slow to the intermediate rate or speed just before contacting the work.

A choice of operation under or over 250 tons can be made simply by turning a selector switch. When operating at pressures below 250 tons, the slow pressing speed is eliminated, as the 1000-ton pressing area is not used. Thus, pressure is adjustable from below 50 tons to 1000 tons.

Push buttons permit emergency stopping in any position of the stroke so that the press cycle can be stopped after it is once started. Once stopped, the press may be restarted in either direction.

Inching may be accomplished by the push buttons after the selector switch is turned from the "Run" to the "Jog" position, which makes available the same protection against over-pressure and over-travel as when the press is being operated continuously in production.

Note the hydraulic cushion in the bed for blank-holding or shape-holding purposes. Having a capacity of 100 tons, the pressure of the cushion is always indicated whether or not the cushion is moving. Return of the cushion during the return stroke may be delayed to allow the main slide to clear the work.

A Bliss special normally open type of prefill valve is used to fill the main cylinder from the tank during the positive quick closing of the press, assuring a free flow and protecting the press against cavitation when pressure is applied, providing also for a rapid generation of pressure.

An air filter, oil filter and oil cooler are furnished with the press, the latter being equipped with a thermostatically controlled water inlet valve.

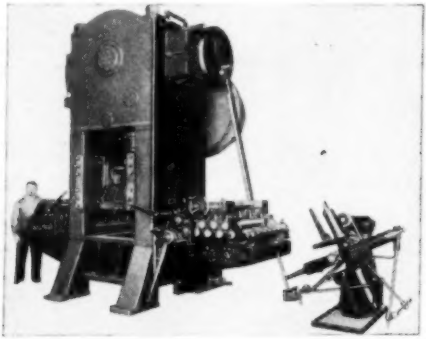
Shut height or die space is 20 inches and maximum length of stroke is 15 inches. The slide face is 37x37 inches. A 27 inch diameter cushion pad in the bed has a 7½ inch stroke and a pressure capacity of 100 tons. The press is designed to operate at about 16 cycles per minute, running continuously with full automatic control.

Further information may be obtained by addressing the makers on your letterhead, mentioning The BLUE BOOK.

For specifications sheet and price lists use Quickmail Coupon No. 55.

Littell Develops Versatile Unit

The F. J. Littell Machine Co., 4153 Ravenswood Ave., Chicago, recently produced for one of its customers a No. 7-30 double rack and pinion roll feed, power driven 7-roll straightener, scrap cutter and power driven automatic centering reel all combined in a single unit.



The feed rolls are 7⅓ inches in diameter and 30 inches wide, mounted on adjustable brackets to feed 0 to 30 inch stock. The feed was built to handle hard aluminum stock .102" thick and 27 inches wide in coils, and ¼ inch thick by 27 inches wide stock in strips. The aluminum stock is said to have a tensile strength of 60,000 pounds and is very stiff.

Feeding and straightening rolls are hardened and ground and the machine is equipped with an automatic release brake so it will feed 1200 inches per minute.

Straightening rolls are 4 inches in diameter and 30 inches wide. Feed driving rack is 2½ inches square. The long lever on the right hand side is for ratcheting the feed ahead when a new coil is inserted. The two short levers at right and left raise the rolls when desired.

(Continued on Page 72)

COLLET FEED FINGER DATA

Large or Small — Standard or Special

DIAMOND-GRIP COLLETS

Are the only collets with Diamond-Serrations that grip tighter under less tension and clear themselves of dirt, scale, and chips.

● Standard DIAMOND-GRIP Collets are furnished for all screw machines in single-piece, master, and compensating master styles. If your job requires special collets, you can have them with Diamond-Serrations. Send work and machine details for a quotation on DIAMOND-GRIP Collets specially engineered to the job.

Coupon 59 *will save time and bring you a copy of complete Sutton Catalog by return mail.*

SUTTON TOOL CO., 2836 W. Grand Boulevard, DETROIT, MICHIGAN

Feed is equipped with automatic lifters so that the feed rolls on both sides of the press can be lifted at each stroke of the press to enable pilots to adjust the stock to just the position in which it should be. In this way any slight inaccuracy of the feed is taken care of by the pilots.

The feed is fitted with a heavy duty scrap cutter operated from the press crankshaft.

The Littell No. 15 power-driven automatic centering reel is shown at right of the illustration. This reel is arranged to wind off a loop so that the feed does not pull directly from the coil. When a loop is wound off it pushes against the lever, automatically stopping the reel.

This is a heavy duty feed with large shafts, and designed throughout for strength and rigidity.

The makers will be glad to send you any desired information about this unit, or any other Littell equipment. Write to them direct on your business letterhead.

Stark Presents A New Integral Drive Precision Bench Lathe

The new Stark lathe unit comes complete with built-in motor and speed-changing mechanism. Electrical connections are all that's required—no bench cutting or fastening—or millwrighting is necessary.

The integral drive comprises a ½ h.p., ballbearing motor driving through a disc clutch and variable V-belt sheaves and through V-belts to the headstock, giving any speed between 156 and 2200 r.p.m., for the standard model, and between 300 and 3000 r.p.m., for the high speed model. Speeds are changed by a convenient hand wheel and are registered on an indicator mounted on the switch column.

The standard model is equipped with hardened spindle and tapered bronze bearings at both ends. The high speed model is regularly equipped with anti-friction bearings, preloaded for maximum life and precision.

All Stark attachments except the milling attachment may be used.

Complete details may be obtained by sending Quickmail Coupon No. 11 to the Stark Tool Co., Waltham, Mass.

LESS BREAKAGE
MORE PRODUCTION
with GREATER ECONOMY
TECO TUNGSTEN CARBIDE TIPPED TOOLS

Less breakage . . . more production . . . greater economy . . . are these things important to you?

If you want to be certain of all three—ASK FOR TECO.

TECO Tools have earned a reputation of "Tools that can take it".

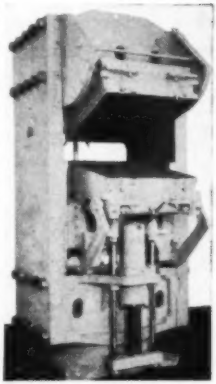
Send Quickmail Coupon No. 84 for catalog, price list and complete information.

1. Piston Grooving Tool.
2. Standard Turning Tool.
3. Square Nose Tool.
4. Porcelain Counterbore.
5. Combination Drill Counterbore.
6. Form Tool.
7. Four Fluted Step Reamer.
8. Flat Drill.
9. Glass Drill.

SUPER TOOL COMPANY

356 EAST CONGRESS ST. • DETROIT, MICHIGAN

Lake Erie Moulding Press



A new automatic hydraulic moulding press for the quantity production of moulded plastic and rubber parts at low unit cost, is announced by The Lake Erie Engineering Corp., Kenmore Station, Buffalo, N. Y.

The unit is of the fast production tilting head type with automatic multiple ejection of the moulded forms, provided with self-contained pump or for accumulator operation.

The rated capacity is 1000 tons for molds measuring 38x38 inches.

It is claimed that automatic operation makes it possible for one man to run four presses. The units should prove useful in moulding mechanical rubber goods and plastic parts like pedal pads, casters, gear shift knobs, electrical parts, etc., in volume production quantities.

The makers will gladly send you complete information and specifications if you write them on your business letterhead. Use Quickmail Coupon No. 27.

Quick Reference File on Laminated Brass Shims

Designing engineers and their staffs will be interested in the convenient new specifications file folder issued by the Laminated Shim Co., Long Island City, N. Y.

Detailed specifications of laminated brass shim stock (Laminum) give essential information on the materials, their composition, degree of lamination, stock size, etc., at a glance. Copies in reasonable quantities may be obtained by addressing the makers on your business letterhead, mentioning The BLUE BOOK.

MARSCHKE

Formerly Van Dorn, Black & Decker

HEAVY DUTY GRINDERS AND BUFFERS

There must be *variety of types* to find the right grinder or buffer for your particular kind of grinding or polishing.

You also need *variety of sizes* to pick the machine with sufficient weight and power for maximum work in a given time.

But whatever the type or size, the first requirement of grinders and polishers is quality—of design, materials and workmanship—to assure years of *continuously uninterrupted service.*

THESE ARE THREE GOOD REASONS FOR STANDARDIZING ON MARSCHKE GRINDERS and BUFFERS — formerly made by Van Dorn, Black & Decker—now being manufactured and sold by,

VONNEGUT MOULDER CORP.

1805 Madison Ave., Indianapolis, Ind.

Send for catalog showing machines with 10" to 30" wheels and 1 to 25 H. P. motors.

NOTICE to Readers

If you sent a Quickmail Coupon last month for Ross Catalog and have not received your copy, it is because of error in Quickmail Coupon as printed in November issue.

Please send another request for your Ross Operating Valve Company's catalog and you will receive your copy promptly.

Thank You

Dumore Issues New Sales Manual

The Dumore Company, Racine, Wis., has recently issued a new industrial sales manual to be used by supply distributors and their salesmen. The new manual is written in a friendly, personal style, and it is obvious that a great deal of thought and study was devoted to its preparation.

The pages devoted to the description and illustration of typical Dumore job installations and operations should prove especially helpful to men who work with Dumore grinding equipment and to manufacturers who are occasionally faced with tricky problems in milling or grinding. The books are available for consultation at the office of your nearest Dumore distributor.

New Wrought Washer Bulletin

Describing the company's diversified products and services which are available to manufacturers to-day, a new catalog bulletin entitled "Over 20,000 Varieties" has been published by the Wrought Washer Mfg. Co., Milwaukee, Wis. Copies may be had on request.

ROSS *Air Control* VALVES

ALL PORTS ON ONE FACE

This permits mounting on a bracket to which piping is permanently installed—then to remove valve you need only loosen four bolts. Also allows gang mounting of valves in minimum space and in any desired position. This simplified design makes installation easy.

Poppet type offers lightning-like action. Positive air pressure seal gives maximum efficiency. Short throw makes Ross the ideal valve for mechanical control. Reliable, smooth operation of your air actuated equipment assured when you install Ross valves.

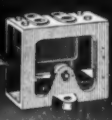
Send Quickmail Coupon No. 73 for Catalog

ROSS OPERATING VALVE COMPANY

6480 Epworth Blvd. Detroit, Mich.

THE BRIDLE FOR AIR HORSEPOWER

HAND CONTROL



FOOT CONTROL

SOLENOID CONTROL

MECHANICAL CONTROL

A SIZE AND TYPE FOR EVERY OPERATIO

I.M.C. Lester-Designed Injection Molding Machine LPM-2

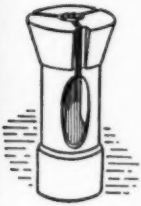
Ruggedly constructed and fully automatic, the new I.M.C. Lester-designed injection molding machine announced last month is offered for the injection of larger articles with a maximum weight of six ounces per casting.

For semi-automatic operation, a single operating lever is provided. Full automatic operations of the machine are controlled by two electric clocks. All controls are within easy reach and no change of position is necessary for complete control of the machine.

The molds are closed by hydraulic power, operating toggle joints, and these joints are firmly locked by tapered surfaces when the mold is closed, which is said to remove all strain from the toggle pins and to insure rigid locking of the molds during injection. As a result of this construction, it is stated that the machine is capable of holding the molds closed for the injection of an area of 40 square inches.

Another new feature is the adjustment of the mold on the tie bars. This is accomplished by a worm

(Continued on Page 80)



"These 'MODERN' COLLETS Sure Do The Job!"

Take the word of the man on the machine for Modern Collet performance. Perhaps he won't tell you that Modern Collets are made of a special steel and have a hard long-wearing surface with a tough springy core . . . that their accuracy in design is guaranteed . . . that the taper is ground true with the hole . . . or that the deeper, better formed corrugations always give a positive grip.

But it is because of these facts that he can tell you that Modern Collets make his job easier and more trouble-free. His own experience has shown that, by using Modern Collets, locking fingers and shoes last longer, far less strain is exerted on the chucking cam and chucking cam roller pins, and the work produced is always above criticism. It's the man who sees them in daily use who can really testify to the worth of Modern Collets.

Catalog 33 lists complete information and prices on all perishable parts and tools for all types of screw machines. Send Quickmail Coupon No. 28 today!

MODERN COLLET & MACHINE CO.
403 SALLIOTTE ST. ECORSE, MICH.

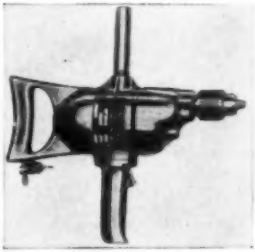
and worm wheel which advances the die plates uniformly, assuring absolute parallelism of the die plates on the tie bars at all times. The bars are 3¼ inches in diameter.

The entire heating cylinder is chromium plated and the whole assembly swings away from the machine, affording easy accessibility for adjustments.

Injection stroke of 8½ inches is accomplished in 3 seconds. The machine base serves as an oil reservoir. The machine is a self-contained unit, ready for operation as soon as the 10 h.p., motor is installed. No other auxiliary equipment is required.

Index Machinery Corp., 49 Central Ave., Cincinnati, O., are sole distributors for the U. S. and Canada. A bulletin giving complete specifications may be obtained by sticking Quickmail Coupon **No. 3** on an envelope and enclosing your business letterhead.

Syntron Develops Line of Electric Drills



A complete new line of portable electric drills is announced by the Syntron Co., 300 Lexington Ave., Homer City, Pa.

The leader is the ½ inch capacity model No. 12-S illustrated. The modern streamline design will be noted, with corners rounded off so as to prevent catching in the operator's clothing. Also the sturdy cross bar handles and end spade handle.

The aluminum shell houses a powerful universal electric motor. Reduction gears are said to be of heat-treated chrome molybdenum steel, ball-bearing mounted. The 3-jaw Jacobs chuck accommodates up to ½ inch straight shank drill bits.

Offered at a popular price, the 12-S should prove a useful tool for all-purpose work on production lines, for factory maintenance and for outside rough construction service.

For catalog covering the complete line, stick Quickmail Coupon No. 21 on an envelope and enclose your signed business letterhead.

New Metal Cutting 14 inch BAND SAW

The regular 14-inch Delta Band Saw, fitted with countershaft to reduce the speed, has been used in hundreds of shops for cutting Iron, Steel, Brass, Bronze and Aluminum bars, shapes and sheets; in foundries, for cutting off gates, in die-casting shops for trimming and sawing castings.

Here is a new and improved back-geared model which is even more ideal for this work. It is the perfect machine for the general machine shop, tool room or experimental shop, where many different materials must be cut.

It takes the place of a power hack saw in cutting off bars and shapes; it is used in the toolroom for sawing off tool, die and fixture stock; it will cut uniform strips from sheets; it saves hours of time in cutting templates and similar tools, and will cut almost any material, such as asbestos, mica, vulcanite, fiber, etc. . . . difficult to cut by ordinary means. Provision is made for four low metal-cutting speeds and one high speed for wood sawing.

Send Coupon No. 29 for special circular giving full details and specifications.

$79.50 14" Back-geared Metal-Cutting Band Saw, complete with guards, 8" arbor pulley for wood and cone pulley for metal. With one 14-tooth metal-cutting blade. Without light attachment, belts, stand, motor or motor pulley. Shipping weight 175 lbs.

DELTA MANUFACTURING CO.
637 E. Vienna Ave., Milwaukee, Wis.

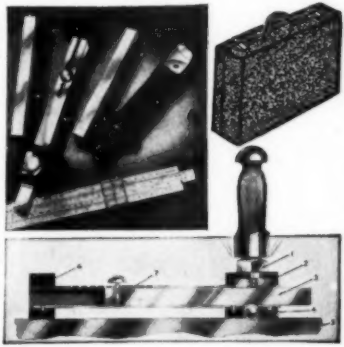
Telebrineller—A New Portable Brinell

A Brinell hardness testing outfit which weighs only 6½ pounds complete in carrying case, now makes it possible to conduct tests in the field or around industrial plants remote from laboratory facilities. According to the makers, it can be used in close quarters, and may be applied to parts and equipment where size has heretofore made testing difficult, expensive and sometimes virtually impossible.

The instrument was devised by a large railroad rail maintenance organization to check and control the rebuilding (welding) and heat treating of rail ends on the right-of-way.

It is said that the instrument is not affected by hot or cold weather; it is built to withstand hard usage, and no previous training or experience is required to operate it accurately.

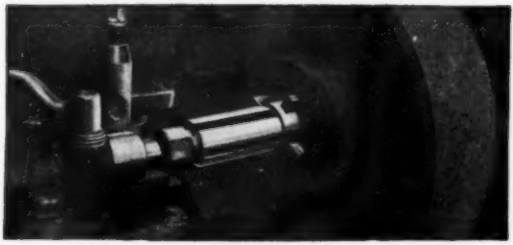
The outfit consists of the Telebrineller instrument proper, a bar of known hardness, a microscope with scale etched in its focal plane and a slide rule, packed with extra test bars and impression balls in a small case.



The instrument itself comprises a metal tube supported in a soft rubber head (2) and a rubber spacing block (6) the tube holding the bar of known hardness (3). An anvil (1) in the top of the rubber head rests directly on the bar. Below the bar an impression ball (4) secured in a narrow aperture in the base of the head comes in direct contact with the metal to be tested. The spacing bar (7) holds the bar in a clear area for each test.

(Continued on Page 84)

With NICHOLSON EXPANDING MANDRELS



you have available for immediate use internal chucks for holding any hurry-up break-down job that comes along. Can be used on lathes, grinders, shapers or millers. Take any bore—1/2" to 7". Made in fourteen sizes. *Send Quick-mail Coupon No. 45 for Bulletin 530.*

---

3 and 4-Way CONTROL VALVES for operating single and double acting air, steam, water and oil cylinders. Made in lever, foot, solenoid and motor operated. All pressures up to 3000 lbs. Bulletin on request.

Other Products: Arbor Presses, Flexible Couplings, Steel and Stainless Ball Floats, Steam Traps and Separators, Air Separators, Traps and Vents, etc.

W. H. Nicholson & Company
117 Oregon St., Wilkes-Barre, Pa.

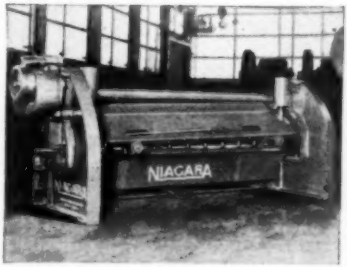
In making a test the instrument is held against the specimen and the anvil is struck a sharp blow with a 3 to 5 pound hammer. The impact is transmitted through the anvil to the bar, then to the ball and on to the specimen. Force of the blow is said not to be a factor, the diameter of the impression in the bar and in the specimen being, in any case, relative to their individual Brinell hardness number (BHN).

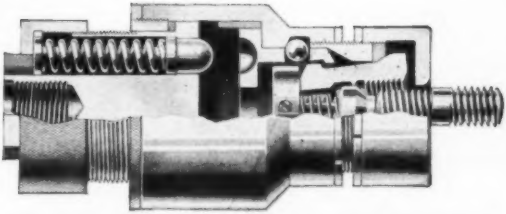
Diameters of the impressions are then measured in 1/10 millimeters by placing the microscope over each in turn and reading the scale. Figuring the BHN is then a simple matter of using either an arithmetical formula or the slide rule.

For new literature fully describing the Telebrineller and its use, write on your letterhead to Teleweld, Inc., Railway Exchange Building, Chicago. Use Quickmail Coupon No. 63.

New Niagara Squaring Shears

Niagara Machine & Tool Works, 637 Northland Ave., Buffalo, N. Y., announces the addition of a line of new series SL power squaring shears built in 6, 8, 10 and 12-foot lengths and intended for flat shearing of 3/16-inch steel and 14 and 16 foot lengths of No. 10 gage steel. Interesting features include: — triangular section crosshead with low slope; enclosed drive mounted on anti-friction bearings running in oil; 14 point engagement sleeve clutch with built-in single stroke mechanism and Niagara alloy steel knives. Write the makers on your business letterhead for full information. Use Quickmail Coupon No. 52.





TITAN STUD SETTER

Sets Studs to a Uniform Degree of Tightness without Strained or Mutilated Threads

The Titan Stud Setter is a new controlled drive type for driving stud bolts, being full automatic in loading and releasing. It is a power-driven unit adaptable to all types of drill presses, air or electric tools, both portable and stationary. Operates at high or low speeds. Positive in driving and automatic in releasing. Studs may be set to any predetermined degree of tightness.

The possibilities of increased production with this tool, due to its capacity, speed range and service, plus the added economy that its safety features assure by automatic operation—all contribute toward making it a tool worthy of investigation and profitable to use.

TITAN TOOL COMPANY

FAIRVIEW, PENNA., U. S. A.

"Dyno-Mite"—New Millers Falls 1/4" Drill

Featherweight streamlined power is what the Millers Falls Co., Greenfield, Massachusetts, claim for their new quarter inch production drill. Small in size, light and easy to handle, the new drill is said to be capable of drilling ¼ inch holes in steel continuously at a rate equal to drills several times its size. Easy, one hand control with little or no fatigue is said to be assured by its light weight and perfect balance, and the small girth and streamlined shape permit use in extremely close quarters.

A die cast aluminum shell houses the powerful little motor with its ball bearing armature running in a horseshoe field. The quiet helical gears are specified as chrome molybdenum steel, heat treated. The spindle runs in an oversized oilite bearing and is equipped with a ball thrust bearing. Copious, unob-

(Continued on Page 88)

The VINCO

Angle Tangent to Radius Dresser

for

Internal, External and Surface Grinding Machines

Patented June 5 1934, other patents pending.

The Vinco Dresser has the basic patented principle of dressing angles and radii from the same axis without moving the diamond, angles and radii are always accurate and tangent. The Templet shown was ground with a wheel formed by this dresser. The contour of this templet consists of angles, arcs, complete half circles, convex and concave radii. All dimensions are held to one ten thousandth of an inch plus or minus accuracy. The Vinco Dresser is so designed and made that there is no time limit to its life. It is a permanent precision made tool, accurate, and so efficient that it saves 75% in dressing costs. It is fully guaranteed to be satisfactory.

Send Quickmail Coupon No. 37 for Descriptive Circular

VINCO TOOL CO.

7348 Central Ave., Detroit, Mich.

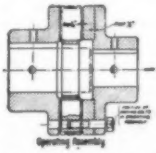
structed air flow maintains the proper operating temperature, and the handiness of the switch control is obvious. It is stated that Dyno-Mite can be completely disassembled and put together within a very few minutes.

Universal D. C. or A. C. motors are used for operation on frequencies up to 60 cycles at 110 and 220 volts. A Jacobs keyed chuck is provided. No-load speed is 1600 r.p.m. and full load speed 875. Overall length is 8 inches, girth 9½ inches and weight 2½ pounds.

The manufacturers will gladly send you full information if you will stick Quickmail Coupon No. 62 on a stamped envelope and enclose your signed letterhead.

Lovejoy Develops New Flexible Coupling

Lovejoy Flexible Coupling Co., 5026 W. Lake St., Chicago, announce Type QW, a new adaptation of their L-R principle. The new coupling has one set of jaws made in the form of a removable ring, held in place and driven by 3, 5, 7 or 9 hexagon head alloy steel cap screws operating from the jaw body. As the pilot holding the jaw ring in place is ⅛" deep, while gap between cushions and jaw body is 3/16", when the jaw ring is pulled over there develops a clearance of 1/16"—ample for rotating either half of the coupling, which is especially valuable for timing engines. Disconnecting is effected by taking out and reversing the cap screws so that they operate from the other body without disturbing the load cushions or steel retaining band.



Three types of cushions are used—Metalflex, for heavy shock loads or exposure to severe weather, Leather, for sustained loads and greater misalignment —and Multiflex cushions for widely fluctuating loads.

The new L-R Type WQ units are made in standard sizes with bores from 1½ to 14 inches (2 to 2000 h.p. at 100 r.p.m.). Further information details and bulletin may be obtained by writing the maker on your business letterhead.

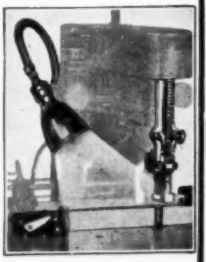
VIMCOLIGHT

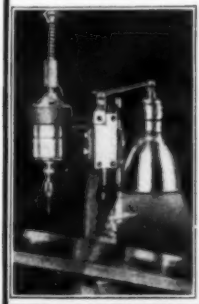
NOW TWO MORE USERS OF VIMCO GENERAL MACHINE LIGHTS

★ Increases Efficiency.
★ Ends Glare.
★ Universal Adj. Mount.
★ Attractively Finished.
★ 24 Types.

THE CHALLENGE MACHINE CO.

is using as standard equipment VIMCO-LIGHT in connection with their New Paper Perforating Machine for the general printing trade.





DURO METAL PRODUCTS CO.

Heavy Duty 16 and 30 inch Scroll Saws are well lighted by VIMCOLIGHTS as a part of each machine.

VIMCOLIGHTS are doing a good job for others . . . Why not for you!

Quickmail Coupon No. 79 will bring full information

Vimco Products are manufactured and fully guaranteed by

VIMCO MFG., COMPANY, INC.

109 Chenango Street — Buffalo, New York

Speedmaster—A New Wide Range Transmission

The Speedmaster Co., 1301 S. Washington Ave., Minneapolis, Minn., announce a new transmission unit for a wide range of variable speeds.

V-belts are employed which run over adjustable Bakelite pulleys. In the unit illustrated, the output shaft runs at 90 r.p.m. at the slow speed and 4300 r.p.m. at the high speed. This extremely wide ratio of over 45:1 is accomplished in a relatively small, compact unit.

Alignment between pulleys and belts is said to be automatically maintained throughout the entire range of speed adjustment. It is pointed out that the smooth-faced Bakelite pulleys assure maximum belt life. Standard makes of belts are adaptable to this transmission, which makes belt replacement simple and inexpensive.

A hand wheel on the cabinet controls a toggle lever of the pulleys for speed changes. The dial of the built-in speed indicator is in a convenient position for reading, and is said to show the exact speed at which the output shaft is running at any moment.

The output shaft may be coupled direct to the product that is to be driven, or a V-belt may be used on the pulley as shown in position on the output shaft. A ½ h.p. motor is shown on top, but may be mounted in various positions on the housing, or can be enclosed so that the entire unit may form a base or leg of the machine it drives.

While the unit has a ratio of over 45:1, it is not necessary to confine the use of the Speedmaster to extremely wide range applications. It may be used equally well transmitting power where only a small portion of the ratio is needed. It is stated that the device is used very successfully on such machines as

(Continued on Page 92)

NEW ALL-PURPOSE MOTO-TOOL

SAVES TIME AND LABOR ON DIFFICULT PRECISION WORK

$16.50 Postpaid

MODEL 2

FASTER MORE POWERFUL

An entirely NEW and attractive motor-in-hand tool that every mechanic will appreciate. It grinds, drills, routs, carves, polishes, etc. on *all materials.* Turns out work you can show with pride. Takes 10 seconds to do 10 minutes hand work. Absolutely safe and dependable. Many users have found that this rugged machine pays for itself on the first job. There are scores of jobs in every plant where it can be used to advantage.

Top: Universal Stand $4.50

Bottom: Shaping Table $2.50

Stand Extra

Exclusive refinements include—integral finger grip close to the chuck—self-releasing chuck lock — convenient snap switch — air cleaner with removable screen and a practical hanger. Sturdy construction. Powerful—about 27,000 r. p. m. Plugs into any A. C. or D. C. socket. Runs cool. Oilless bearings—practically no maintenance expense. Weighs 13 oz.

TWO NEW ACCESSORIES. Universal Stand and Shaping Table for accuracy and control. Practical tool sets and complete assortment of tools available.

Ask your distributor to demonstrate—or order direct on *ten day money-back trial.*

Send Quickmail Coupon No. 44 for **illustrated booklet FREE.**

DREMEL MFG. CO.

5824 CT **Racine, Wisconsin**

the Doall contour machine, for which Speedmaster is standard equipment. For such use, the makers assert that it is highly efficient, comparatively inexpensive and substantially trouble-free.

Full information may be had by writing to the makers on your business letterhead, mentioning The BLUE BOOK.

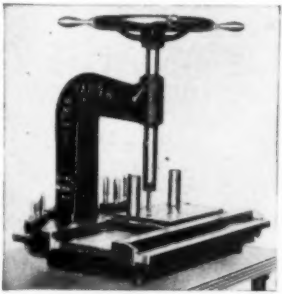
Here's The New Master Tapper

Precision tapping in one-fifth the time required by the ordinary not-so-accurate hand job—that's one of the strong claims made for the Master tapper.

Further, it is asserted that tap breakage is eliminated, thus permitting the use of high speed ground thread taps at lower cost than carbon taps.

Quick changing adapters permit tap changing in five seconds. Positive drive is assured by the broached fit which accommodates the square shanks of taps. The parts are hardened and ground to fit shanks of high speed ground thread taps, sizes ¼ to ⅞ inch inclusive. A complete stock of N. C., N. F. high speed ground thread taps is carried in stock at all times.

The long spindle of the Master tapper eliminates the need for a tap extension for reaching work with inconvenient projections. Two sliding parallel bars hold the work firmly in place while tapping.

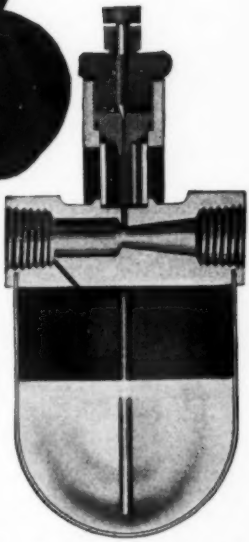


Spindle and bushings are hardened, ground and lapped to gage fit, which, it is pointed out, assures long, useful life.

The bracket arm extends 9 inches from top of base, which measures 14x20 inches. The spindle is 1¼ inches in diameter and 13 inches long. A lock is provided for holding spindle in position while arranging parts to be tapped, and lubrication

(Continued on Page 94)

Oiled Air beats Raw Air



Raw air is an irritant to air tools. Oiled air keeps every part protected with an oil film at all times. This Norgren Air Line Lubricator automatically lubricates the air that drives the tool.

Lubricant is fed at a predetermined and easily adjustable rate to the air stream and reaches the tool as an oil fog—smooth, oiled air that drives the tool and maintains a film on every moving part. Increases tool efficiency, reduces wear, leaves the tool in perfect condition when not in use.

Norgren Sight Feed Air Line Lubricators save more than they cost.

Send Quickmail Coupon No. 61 for catalog.

C. A. NORGREN CO., INC.

214 Santa Fe Drive, Denver, Colorado

is by Alemite. Four inserted steel handles are provided in the hand wheel.

The base is a semi-steel casting, well ribbed and seasoned to prevent warping. It is planed accurately and the bracket arm bottom is scraped to assure that spindle is perfectly square with base. Stand is 20x30x28 inches high with sturdy tubular legs and braces and 1½ inch all maple laminated top.

Eight adapters are provided with each Master Tapper. The makers will be glad to tell you about their 10-day trial offer and to send you any further information desired. Write The Master Tapper Co., 270 Central Ave., Newark, N. J.

Relieving Eye Strain

Better light, better sight, better work—that's what Holmes Products Co., 21 E. Van Buren St., Chicago claim for their new non-glare prismatic lens. The device is easily slipped in place on the end of a lamp bulb and held in place by spring clips. It distributes and prevents concentration of the light at any spot and promotes eye comfort. It is made in two sizes—the No. 60 for 50-60-75 watt bulbs and the No. 100 for 100 watt bulbs, and sold on a money-back guarantee. The Holmes Products Co., will be glad to send you full information. Write them on your letterhead and mention The BLUE BOOK.

New Bulletin On Barnes Gear Pump

Readers will find a very lucid explanation of the design, construction and operation of Barnes gear pumps in a new broadside issued by the W. F. and John Barnes Co., Rockford, Ill. A thorough exposition of the gear tooth structure is given with a number of large detail illustrations. Several different models of Barnes pumps are shown, together with performance data and a layout of a typical simple feed and rapid traverse circuit. Copies of the bulletin will be sent if you write to the makers on your business letterhead and mention The BLUE BOOK.

Machine Bolts That Assure Quick Assembly Economies

Made with uncommon precision, Triplex Machine Bolts "fit" on the job, no lost time in assembly. Clean free-running threads the nut can spin tight on. Strictly specified steel and modern electric heat-treatment for extra strength and trouble-free service. Millions of users find Triplex a better source of supply—so can you.

Write for catalog and samples.

THE TRIPLEX SCREW CO.
5377 Grant Ave., Cleveland, Ohio

TRIPLEX

Complete Line of **CAP AND SET SCREWS, BOLTS AND NUTS**

Shop Envelope Keeps Orders Clean

The new shop envelope illustrated below is manufactured by the Wade Instrument Co., 2246 Brooklyn Station, Cleveland, Ohio, and is designed to keep shop orders, blueprints, instructions, notices and other papers clean and readable when they are posted near machines or attached to jobs in work.

The new holder is closed on two sides and the bottom and is open at the top to form a pocket for the job card or printed slip.

The transparent face of noninflammable acetate permits reading the print without removing it from the holder. A lacquered metal back forms a firm support, keeping the print smooth. The back extends a short distance above the face and is perforated, so that the holder can be hung on the wall.

The three available sizes are six by nine, nine by twelve and twelve by eighteen inches. Special sizes with extra metal or transparent pockets can be made to order.

Atlas Expands Plant

Atlas Press Co., Kalamazoo, Mich., recently completed a plant addition which provides 15,000 square feet of additional floor space. The new floors are being used to increase production of Atlas bench lathes, shapers, drill presses and arbor presses.

HIGH SPEED
TAPPING
ATTACHMENTS
FEATURING THE
PROCUNIER

CLUTCH—Double-cone, cork-faced friction clutch. Sensitive. Powerful. Practically indestructible.

BALL BEARINGS — afford rigidity, accuracy and long life.

REVERSE--speed twice forward speed through patented three-point balanced heat treated gear reversing mechanism. Less strain.

"TRU-GRIP"—collet type tap holder. Smallest and lightest of its kind. Most accurate and practical tap holder that ever held a tap.

PROCUNIER style "E" high speed tapping heads will cut your tapping costs. ***Write for new folder.***

Use Quickmail Coupon No. 13

PROCUNIER SAFETY CHUCK CO.
14 S. CLINTON ST., CHICAGO, ILL.

ERRINGTON HYSPD

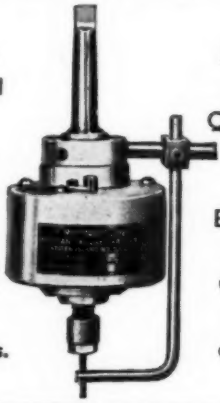
Super-Sensitive Ball Bearing

Cone Drive

2 to 1 Auto-Reverse Tapping Chuck

Combination Bronze & Ball Bearings Thru-Out

Easy and Economical Replacement of Cone-Clutches.



Depth gauge facilitates Quick-Handling Especially on Bottom-Holes

Other Styles and Sizes 0" to 2" taps

Size	Taps in Steel	Taps in Cast Iron	Price	Code
No. 00	0" to 3/16"	to ¼"	$35.00	Phlam
No. 0	to ⅜"	to ½"	$50.00	Phalanx

The principle on which this Style is designed is especially effective on very small tapping; whereas in the **No. 0** size the Frictional Grip is Greatly **INTENSIFIED**, to cover a wider range, without loss of sensitiveness.

Errington Mechanical Laboratory

Main Office and Works: STATEN ISLAND, New York

Chicago Office: 6047 N. Talman Ave. New York Office: 220 Broadway Boston Office: 930 Old South Bldg.

Phillips Recessed Head Screws

Send Quickmail Coupon No. 76 for catalog No. 9—a reference manual of screw driver bits—and catalog No. 8 covering Apex Production Tools for Drilling, Tapping, Reaming, Boring, Stud and Nut Setting and Universal Joints.

APEX

SCREW DRIVERS AND BITS

for PHILLIPS Recessed Head Screws

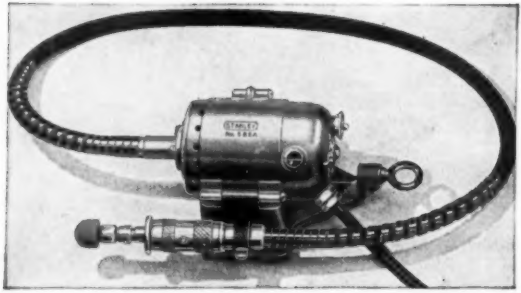
(Pat. No. 2046840)

and all kinds of SLOTTED HEAD SCREWS

APEX-PHILLIPS Hand Screw Drivers and APEX-PHILLIPS Bits for Electric and Air Tools—for all types and sizes of Phillips Recessed Head Screws—are quality tools that will stand the hardest kind of service. Made of a special shock resisting steel combining the qualities of extreme toughness, wear resistance and hardness. Prompt shipment.

Apex Screw Driver Bits for Phillips Recessed Head or Slotted Head Screws will reduce your screw driving costs. Many of the largest users of screws have proved this.

THE APEX MACHINE & TOOL CO.
DAYTON, OHIO



"MAN OF ALL WORK"

For grinding tools, dies, moulds, small castings—all types of small grinding . . . this flexible shaft grinder is a necessity in every tool and die room. Full ⅛ H.P. motor runs at 18,000 R.P.M. Finest quality 42" rubber covered flexible shaft; handle piece has ball bearings, and collet type chuck for ¼" shanks. Accessories, including arbors, pencil wheels and emery wheels, can be supplied. Ask your Stanley distributor for a demonstration, or write for descriptive catalog.

Complete Equipment Includes:

1 Motor Unit with Cable
1 Shaft
1 Chuck ¼" Capacity
1 Combination Bench and Over-head Holder
1 Pressure Grease Gun
2 Wrenches

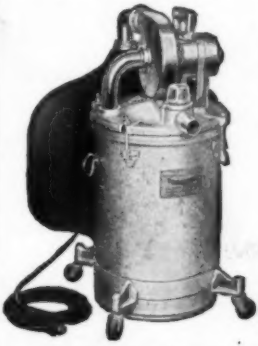
STANLEY ELECTRIC TOOL DIV.
The Stanley Works
141 Elm Street, New Britain, Conn.

CROSS SECTION VIEW of Flexible Shaft Core. Rubber reinforced casing protects the shaft against injury and prevents marring the work.

STANLEY STANLEY **ELECTRIC TOOLS**

A Complete Line For Industry *"Cost Less Per Year"*

For the First Time! Vacuum Cleaning Made Applicable to All Plant Cleaning Requirements at Low Cost With



Breuer's Ball Bearing

TORNADO

Portable Industrial Vacuum Cleaner

This new machine is designed to solve all industrial cleaning problems without the expense of installing a stationary plant or using so-called portable cleaners which are too heavy and expensive for average plant applications.

TREMENDOUS POWER

1 H. P. Motor—46¼ Waterlift

Do not confuse the TORNADO with light-duty cleaning machines. Model 112 combines light weight (only 40 pounds) with tremendous cleaning power (1 H. P. G. E. ball bearing Motor—46¼" waterlift). Patented principle of separating fine dust from refuse and depositing heavy dirt in tank makes this cleaner as applicable to heavy duty work as the largest machines. Sturdy construction insures long life and low yearly cost.

Has plenty of power and capacity to handle dust, dirt, sand, sawdust, metal scraps, filings, etc. Attachments available for cleaning boiler tubes, ovens, machinery, walls, floors, pipes, etc. Motor unit can be quickly removed for blowing dust from motors, etc. The handiest heavy duty, low cost, time and labor saving unit ever built.

We prove TORNADO advantages right in your plant without obligation. Send Quickmail Coupon No. 30 for details of trial offer and further information or write.

BREUER ELECTRIC MFG. CO.

842 Blackhawk Street, Chicago, Illinois

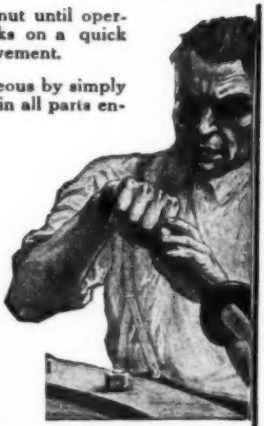
SPEED UP NUT TURNING

WITH THE

FAVORITE REVERSIBLE RATCHET WRENCH

Head does not leave the nut until operation is completed. Works on a quick straight-ahead ratchet movement.

Reverse motion instantaneous by simply turning pawl. New metal in all parts enables the "Favorite" to withstand harder and rougher usage.



A TIME SAVER

Each Head Can Turn Two Different-Sized Nuts.

This is a great saving over ratchet wrenches that turn only one nut in each head, as it means fewer parts to keep on hand.

Skinned Knuckles Avoided and Time Saved
Head Cannot Slip Off Nut

USE COUPON No. 35

Send for Full Particulars

GREENE, TWEED & CO.

Sole Manufacturers

109 Duane St., New York

WYCO TOOLROOM GRINDER

MOUNTED ON THE

WYCO HANDY-CABINET

FAST ENOUGH FOR SMALL WHEELS
SLOW SPEED FOR FILING, DRILLING ETC.

Model No. 20BH also available with flat top Mounting

$67.00

Model No. 20BH
½ H.P. 7200 R.P.M.
with Wheel Arbor and
Collet Hand Piece.

$89

MODEL No. 10B ¼ H. P.
Speeds 900, 1800, 3600
complete with wheel arbor
and drill chuck **$55.00**
with cabinet **$67.00**

MODEL No. 20B ½ H. P.
2400, 3600, 4800 complete
with wheel arbor and drill
chuck **$67.00**
with cabinet **$79.00**

MODEL No. 20C ½ H. P.
2400, 3600, 4800 complete
with wheel arbor and
collet handpiece **$72.00**
with cabinet **$89.00**

SEND QUICKMAIL COUPON NO. 19 FOR CATALOG.

WYZENBEEK & STAFF, INC.
642 WASHINGTON BLVD., CHICAGO, ILL.

QUICKMAIL COUPONS

HOW TO USE THEM

1 Stick Coupon on your letterhead giving your name and position . . . . . .

OR

2 Stick Coupon on front of postal card, giving your name, position and firm name on back of card.

IMPORTANT!

Advertisers will not acknowledge inquiries unless you tell them what firm you are with, and your position with the firm.

A SIMPLE - SPEEDY - SERVICE FOR YOUR CONVENIENCE

STOOLS and CHAIRS

are inexpensive when you buy the kind that **LAST..**

SPECIFY

"HALLOWELL" STEEL STOOLS

They're WELDED . . . . . so they won't get wobbly and go to pieces . . . There's a wide variety of types and styles to choose from.

Fig. 1249
Pat. app. for

Can be supplied without back

SEND FOR OUR CATALOG

STANDARD PRESSED STEEL CO.

JENKINTOWN, PENNA.

BRANCHES
BOSTON
DETROIT
INDIANAPOLIS

Box 559

BRANCHES
CHICAGO
ST. LOUIS
SAN FRANCISCO

Every hour of the day this grinder can be put to profitable use. There's scarcely an off-hand grinding job in any shop—large or small—but what can be touched up with greater precision and finer finish with this handy tool. A 1/8" collet chuck is regularly furnished; available are a variety of mounted wheels and abrasive bands for internal and external work; the No. 8 can be supplied with a 3/32" capacity chuck or No. 0 Jacobs chuck .... There's a Dumore distributor near you who will gladly demonstrate any Dumore tool without obligation.

For information, send Quickmail Coupon No. 10—today!

THE DUMORE CO., Dept. 247-M, RACINE, WIS.

This refers to your ad in Dec. issue of Hitchcock's Blue Book.

HARDINGE BROTHERS, INC.
ELMIRA, N. Y.

1

This refers to your ad in Dec. issue of Hitchcock's Blue Book.

DREIS & KRUMP MFG. CO.
7440 Loomis Blvd.
CHICAGO, ILL.

7

This refers to ad on pages 6 and 7 of Dec. Hitchcock's Blue Book.

HITCHCOCK PUBLISHING CO.
Room 1235
508 S. Dearborn St.
CHICAGO, ILL.

2

This refers to your ad in Dec. issue of Hitchcock's Blue Book.

BUFFALO FORGE CO.
161 Mortimer St.
BUFFALO, N. Y.

8

This refers to article in December issue of Hitchcock's Blue Book.

INDEX MACHINERY CORP.
49 Central Ave.
CINCINNATI, OHIO

3

This refers to your ad in Dec. issue of Hitchcock's Blue Book.

JONES & LAMSON MACHINE CO.
SPRINGFIELD, VT.

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This refers to your ad in Dec. issue of Hitchcock's Blue Book.

CULLMAN WHEEL CO.
1359 Altgeld St.
CHICAGO, ILL.

4

This refers to your ad in Dec. issue of Hitchcock's Blue Book.

THE DUMORE CO
RACINE, WIS.

10

This refers to your ad in Dec. issue of Hitchcock's Blue Book.

ARMSTRONG BLUM MFG. CO.
5741 Bloomingdale Ave.
CHICAGO, ILL.

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This refers to article in December issue of Hitchcock's Blue Book.

STARK TOOL CO.
WALTHAM, MASS.

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This refers to your ad in Dec. issue of Hitchcock's Blue Book.

ARMSTRONG BROS. TOOL CO.
308 N. Francisco Av.
CHICAGO, ILL.

6

ORDER

CHICAGO WHEEL & MFG. CO.
1101 W. Monroe St.
CHICAGO, ILL.

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Patent Pending in U. S. and Foreign Countries—Louis Galter

Stick coupon on a postcard or letterhead and sign name, title and firm. It will bring a bulletin on Chicago Press Brakes.

DREIS & KRUMP MFG. CO.

Stick coupon on your letterhead and sign your name, title and firm name for catalog on the Hardinge Bench Lathe Unit.

HARDINGE BROTHERS, INC.

8

Stick coupon on letterhead or postcard and sign name, title and firm. for bulletin on the Buffalo Ironworker.

BUFFALO FORGE CO.

2

To request bulletin on the Sjogren Speed Collet Chuck, stick coupon on letterhead and sign your name, title and firm name. Your request will be forwarded to the nearest Sjogren distributor.

HITCHCOCK PUBL. CO.

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Stick coupon on letterhead only and sign your name, title and firm for catalog on J & L thread chasers.

JONES & LAMSON MACHINE CO.

3

Stick coupon on your letterhead and sign your name, title and firm name for a bulletin giving details of the LPM-2 molding machine.

INDEX MACHINERY CORP.

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Stick coupon on letterhead or postcard and sign name, title and firm for information on Dumore Grinders.

THE DUMORE CO.

4

Stick coupon on letterhead or postcard and sign name, title and firm for catalog on Cullman speed reducers.

CULLMAN WHEEL CO.

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Stick coupon on your letterhead and sign your name, title and firm name for information on the new Stark integral drive bench lathe.

STARK TOOL CO.

5

Stick coupon on letterhead or postcard and sign name, title and firm for catalog on Marvel No. 18 Hack Saws.

ARMSTRONG-BLUM MFG. CO.

12

Stick coupon on letterhead or postcard and sign name, title and firm for Handee Grinder on 10 day trial.

CHICAGO WHEEL & MFG CO.

6

Stick coupon on letterhead or postcard and sign name, title and firm for catalog on Armstrong Bros. Tools.

ARMSTRONG BROS. TOOL CO.

This refers to your ad in Dec. issue of Hitchcock's Blue Book.

PROCUNIER SAFETY CHUCK CO.
14 S. Clinton St.
CHICAGO, ILL.
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This refers to your ad in Dec. issue of Hitchcock's Blue Book.

TOMKINS-JOHNSON CO.
JACKSON, MICH.
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This refers to your ad in Dec. issue of Hitchcock's Blue Book.

F. H. AYER MFG. CO.
CHICAGO HEIGHTS, ILL.
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Please send further details on the new Hitchcock's Blue Book.

HITCHCOCK PUBLISHING CO.
Room 1235
508 S. Dearborn St.
CHICAGO, ILL.
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This refers to article in December issue of Hitchcock's Blue Book.

BARDONS & OLIVER, INC.
CLEVELAND, OHIO
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This refers to your ad in Dec. issue of Hitchcock's Blue Book.

BALDOR ELECTRIC CO.
4368 Duncan Ave.
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WYZENBEEK & STAFF
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CHICAGO, ILL.
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GALLAND-HENNING MFG. CO.
2753 S. 31st St.
MILWAUKEE, WIS.
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300 Lexington Ave
HOMER CITY, PA.
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This refers to your ad in Dec. issue of Hitchcock's Blue Book.

SKILSAW, INC.
3318 Elston Ave.
CHICAGO, ILL.
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This refers to your ad in Dec. issue of Hitchcock's Blue Book.

RIVETT LATHE & GRINDER, INC.
Brighton
BOSTON, MASS.
24

Patent Pending in U. S. and Foreign Countries

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Stick coupon on letterhead or postcard and sign name, title and firm name for catalog on the complete Wyco line.

WYZENBEEK & STAFF

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Stick coupon on letterhead or postcard and sign name, title and firm for your bulletin on Nopak Valves.

GALLAND-HENDING MFG. CO.

21

Stick coupon on your letterhead and sign your name, title and firm name for catalog describing Syntron portable electric drills.

SYNTRON CO.

22

Stick coupon on your letterhead and sign your name, title and fim name for a catalog on Haskins Flexible Shaft Equipment.

R. G. HASKINS CO.

23

Stick coupon on your letterhead and sign your name, title and firm name for information on the Skilsaw Disc Sander.

SKILSAW, INC.

24

Stick coupon on letterhead or postcard and sign name, title and firm for bulletin on Rivett precision lathes.

RIVETT LATHE & GRINDER, Inc.

13

Stick coupon on letterhead or postcard and sign name, title and firm for information on the Tru-Grip tap holder.

PROCUNIER SAFETY CHUCK CO.

14

Stick coupon on letterhead or postcard and sign name, title and firm for circular on Speed Control Valves.

TOMKINS-JOHNSON CO.

15

Stick coupon on your letterhead and sign your name, title and firm name for a catalog describing the Ayer Sensitive Drill.

F. H. AYER MFG. CO.

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Send us this coupon to receive complete information on advertising rates, page sizes or circulation for the new Blue Book which will appear in Feb., 1938.

HITCHCOCK PUBL. CO.

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Stick coupon on your letterhead and sign your name, title and firm name for information on the No. 2 B. & O. turret lathe.

BARDONS & OLIVER, INC.

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Stick coupon on letterhead or postcard and sign name, title and firm for bulletin on Ball Bearing Grinders.

BALDOR ELEC. CO.

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Stick coupon on letterhead or postcard and sign name, title and firm for catalog on Metal Cutting Band Saws.

WELLS MFG. CORP.

32

Stick coupon on your letterhead and sign your name, title and firm name for information on Queen City heavy duty Grinders.

QUEEN CITY MACHINE TOOL CO.

33

Stick coupon on your letterhead and sign your name, title and firm name for information on the Geometric No. 14 threading machine.

GEOMETRIC TOOL CO.

34

Stick coupon on letterhead or postcard and sign name, title and firm for information on the Atlas 7-inch shaper.

ATLAS PRESS CO.

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Stick coupon on letterhead or postcard and sign name, title and firm for full information on BASA Hammers & Reversible Ratchet Wrench.

GREENE-TWEED & CO.

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Stick coupon on letterhead or postcard and sign name, title and firm for catalog on the L-W Line.

L-W CHUCK CO.

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Stick coupon on letterhead or postcard and sign name, title and firm for information on Wittek Roll Feeds.

WITTEK MFG. CO.

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Stick coupon on letterhead or postcard and sign name, title and firm for your catalog on Flexible Shaft Machines.

N. A. STRAND & CO.

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Stick coupon on your letterhead and sign your name, title and firm name for information on the new Lake Erie molding press.

LAKE ERIE ENGINEERING CORP.

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Stick coupon on your letterhead and sign your name, title and firm name for Catalog No. 33 describing Modern Collet parts for screw machines.

MODERN COLLET AND MACHINE CO.

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Stick coupon on letterhead or postcard and sign name, title and firm for catalog on Delta 14-inch band saws.

DELTA MFG. CO.

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Stick coupon on letterhead or postcard and sign name, title and firm for information on the Tornado Cleaner.

BREUER ELECTRIC MFG. CO.

This refers to your ad in Dec. issue of Hitchcock's Blue Book.

WITTEK MFG. CO.
4305-9 W. 24th Pl.
CHICAGO, ILL.
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This refers to your ad in Dec. issue of Hitchcock's Blue Book.

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5001 N. Wolcott Ave.
CHICAGO, ILL.
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This refers to article in December issue of Hitchcock's Blue Book.

LAKE ERIE ENG. CORP.
Kenmore Station
BUFFALO, N. Y.
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This refers to your ad in Dec. issue of Hitchcock's Blue Book.

MODERN COLLET AND MACH. CO.
403 Salliote St.
ECORSE, MICHIGAN
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DELTA MFG. CO.
637 E. Vienna Ave.
MILWAUKEE, WIS.
29

This refers to your ad in Dec. issue of Hitchcock's Blue Book.

BREUER ELECTRIC MFG. CO.
842 Blackhawk St.
CHICAGO, ILL.
30

This refers to your ad in Dec. issue of Hitchcock's Blue Book.

WELLS MFG. CORP.
315 Seventh Ave.
THREE RIVERS, MICH.
31

This refers to your ad in Dec. issue of Hitchcock's Blue Book.

QUEEN CITY MACHINE TOOL CO.
217 E. Second St.
CINCINNATI, OHIO
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GEOMETRIC TOOL CO.
NEW HAVEN, CONN.
33

This refers to your ad in Dec. issue of Hitchcock's Blue Book.

ATLAS PRESS CO.
1250 N. Pitcher St.
KALAMAZOO, MICH.
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This refers to your ad in Dec. issue of Hitchcock's Blue Book.

GREENE-TWEED & CO.
109 Duane St.
NEW YORK, N. Y.
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This refers to your ad in Dec. issue of Hitchcock's Blue Book.

L-W CHUCK CO.
1-7 N. St. Clair St.
TOLEDO, OHIO
36

Patent Pending in U. S. and Foreign Countries—Louis Galter

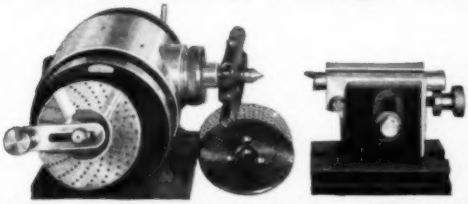
OUTSTANDING TOOL VALUES

10½" Full Universal Dividing Head

Right or left hand
Actual swing 11' **$185**

For all kinds of indexing and spiral cutting. Swivel head stock is graduated to 180 degrees and can be tilted above and below the perpendicular. Spindle has No. 10 B. & S. taper front and back with tapered bearing and thrust collar.

L-W Universal Swing Head



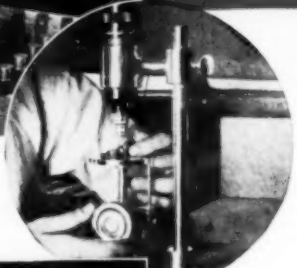
Dimensions similar to dividing head shown above. **$125**

Send Quickmail Coupon No. 36 for complete catalog.

L-W CHUCK CO., 1-7 N. ST. CLAIR ST., TOLEDO, OHIO

Patent Pending in U. S. and Foreign Countries—Louis Galfer

HAN



e De Luxe Handee
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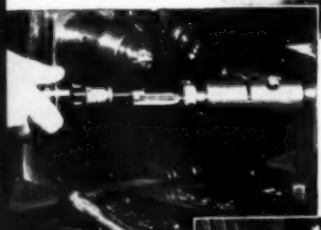
e job.



Reaches those hard-to-get-at places. Its light weight and ease of handling in any position save time on a wide range of operations.

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hops and all metal
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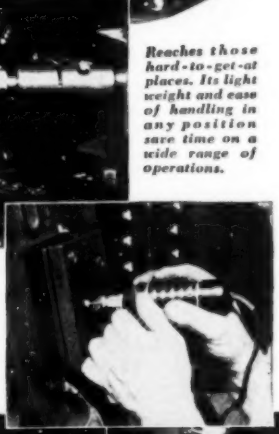

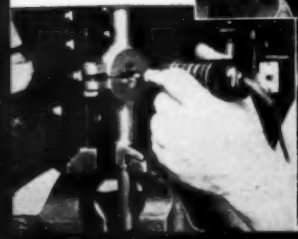

UNMATC
AND SM

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  The original
- Actually a w
  Cuts, Routs
  Sharpens, C
  more than
  changeable.
- Take it a
  DC socket,
  pensable in
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  for work on
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  parts withou
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  tries the Ha
  ever got alo
  so many job
  Saves loa
  yes, tempe
  jobs a cinch.

Order one
Trial or S

BEST
to Deser

IDEE TOOL OF 1001 USES

U. S. Pat. Office

ATCHED POWER, SPEED SMOOTH PERFORMANCE

choice of industry since its introduction, 6 years ago. original tool of this type—and the leader today.

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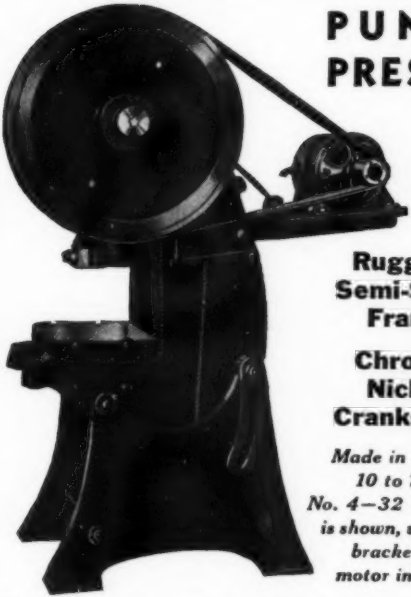

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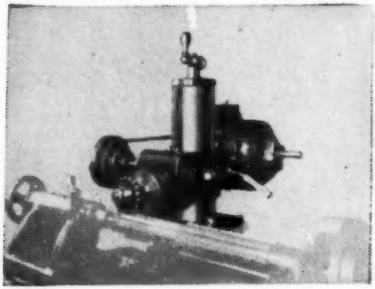

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Does all milling operations such as: gear work, spline work, broaching keyways, hobbing etc. Grinding at all angles, internal or external.

No Dismantling of Lathe — Fits on compound same as your tool post. Not "Just Another Lathe Attachment"

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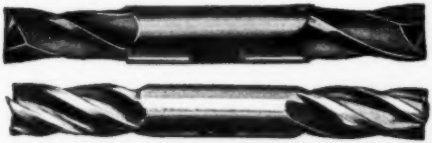

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High Speed and Medium Speed for cutting 90% of all steels.

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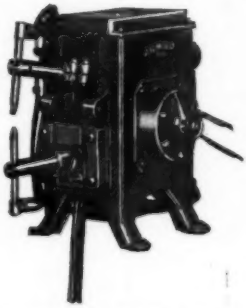

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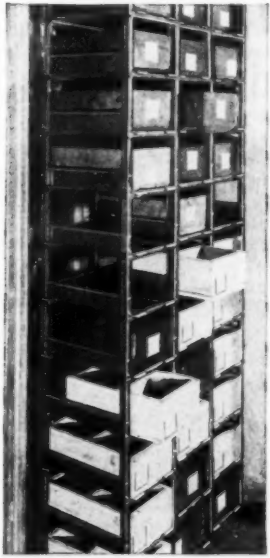

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MODEL 25

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Remove that broken tap quickly—*without* injury to the threads.

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Seen the new RIGID Wrench? Stronger, safer—thicker special alloy metal in the guaranteed housing, improved design. Chrome molybdenum alloy safety jaws and alloy handle—practically ends broken wrench expense.

No wonder RIGID has millions of users. Replaceable jaws slip-and-lock-proof. Adjustable nut spins easily in all sizes, 6" to 60".

Test the RIGID against any other wrench. Buy today from your Jobber.

The Ridge Tool Co., Elyria, Ohio

RIGID PIPE TOOLS

For Your RIVETING

LINLEY NOISELESS ROTARY RIVET SPINNING MACHINES

Assure Peak Production and Lower Maintenance. Rigid and Powerful. Bench and Floor Types. Motor or Belt Driven. There is a Linley machine for every riveting job.

Send samples of your work for riveting, cost of equipment, and true estimates on production.

"Built to Last—Riveting Fast"

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NAILS, RIVETS & SCREWS

MADE TO ORDER IN ANY METAL—SEND FOR ILLUSTRATED FOLDER

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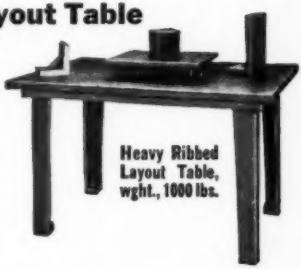
KNU-VISE Layout Table

Angle Plates and Cubes

Layout table is 30"x60", with adjusting screw in each leg to provide perfect table alignment. 1" table edge facilitates clamping. Bench type is 16"x20". All parts are carefully planed and commercially accurate.



KNU-VISE

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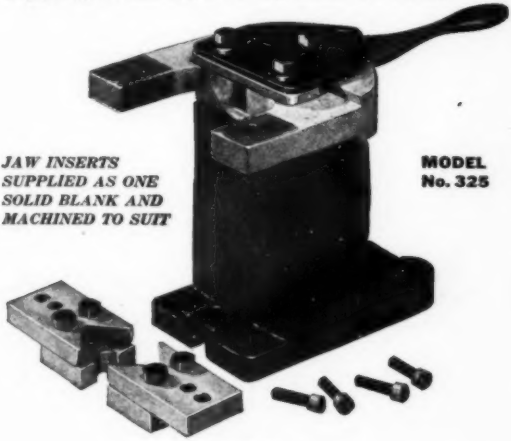
Knuckle Action Holding Fixtures for Drilling, Tapping, Reaming, Milling, Counterboring.



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Motorized Speed Reducers

FOR SLOW SPEED DRIVES OF
1/20 to 7 1/2 H. P.

16 DIFFERENT TYPES

A diversified line of precision built speed reducers which can be adapted to almost any slow speed application.

Rotary Converters — Blower Wheels
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The "BUTTERFLY"
Filing and Die Making Machine

Saves cost in sawing, filing and lapping on dies, gauges, tools, etc.

In highest possible quality of material, precision of machining and nicety of adjustments, the "BUTTERFLY" Filing Machine is as painstaking a product as the finest watch movement —and just as reliable.

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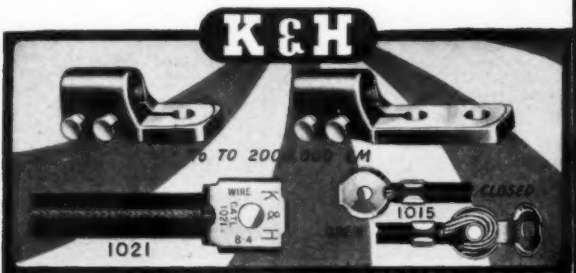

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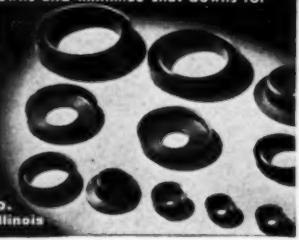
CHICAGO RAWHIDE Packings end power losses—seal perfectly, completely—for they are uniformly exact in size and shape, are precision made. They give long uninterrupted service, prevent break downs and minimize shut downs for they are formed from Mechanical Leather — special hides, mechanically tanned and treated to closely held factors of hardness, resiliency, heat resistance and flexibility. For all around performance and absolute dependability specify "Chicago Rawhide" in packings.



Chicago Rawhide Mfg. Co.
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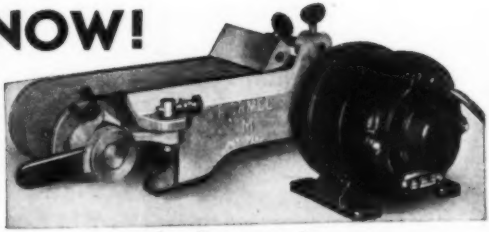

An Inexpensive

ABRASIVE BAND GRINDER—

"Built Like A Machine Tool"

The Hormel-M Grinder is sturdily built with a supporting leg under the grinding table to eliminate vibration and tipping due to pressure on belt. Ball bearing throughout, equipped with Alemite lubrication, complete with grease gun. *Write for illustrated folder on this and other styles and sizes.*

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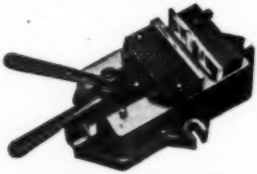
WALLS SALES CORP., 96 Warren St., New York, N. Y.

Designed for Modern Production Needs!



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Quick Opening—Tremendous Binding Power

Modern production milling work demands efficient aids. Thus, when the old type screw vise proved inadequate—a time and money waster—a large New England manufacturer developed the Hartford Milling Vise which affords the utmost in dependability, efficiency and economy. Its lower cam-faced handle gives you quick-opening and return, and the top eccentric lever handle exerts tremendous binding force. With little practice, both levers can be locked or unlocked with one hand.

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We also Build Machinery on a Contract Basis, and Design and Develop Special Automatic Machinery—Gears Cut to Order.

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Drill Trouble ?

Here's the CURE

"Black Diamond" Precision Drill Grinder helps eliminate drill breakage, chipping, splitting by proper grinding. It grinds the lips to exactly the same length — gives the drill proper angle and clearance to insure free and easy cutting. With it anybody can do a precision job of drill grinding.

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BURKE Milling Machines

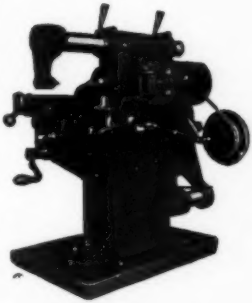
Make Fast Work of Small Jobs

Investigate Burke Milling Machines if you must handle small, difficult work on a production schedule.

Motor drive is available on the Nos. 1, 2, 3 and 4 machines.

Standard equipment, either ball or Timken roller bearings to spindle.

Write today for circulars.



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"ROYERSFORD-EXCELSIOR"

21-inch Motor Driven, Back Geared, Upright

POWER DRILL

A refined and improved modern drill — simple and speedy in operation—strong, rigid and accurate. Machine cut gears—sturdy bearings—ball bearing thrust on spindle—eight speeds—power, hand screw and lever feeds—equipped with all the graduated and automatic features of higher-priced drills.

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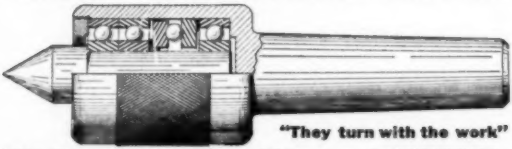

"They turn with the work"

Modern Machine Corp., 313 BERRY ST., BROOKLYN, N.Y.

DOUBLE LIFE PLUG GAUGES

Gauging members can be turned on opposite ends when worn, thereby giving plug 100% more life. Send for circular and prices.

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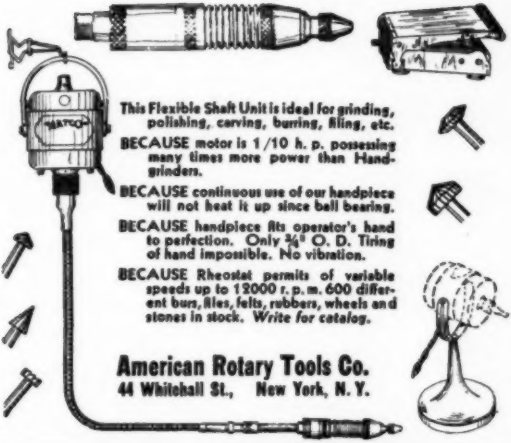

This Flexible Shaft Unit is ideal for grinding, polishing, carving, burring, filing, etc.

BECAUSE motor is 1/10 h. p. possessing many times more power than Hand-grinders.

BECAUSE continuous use of our handpiece will not heat it up since ball bearing.

BECAUSE handpiece fits operator's hand to perfection. Only ¾" O. D. Tiring of hand impossible. No vibration.

BECAUSE Rheostat permits of variable speeds up to 12000 r. p. m. 600 different burs, files, felts, rubbers, wheels and stones in stock. *Write for catalog.*

American Rotary Tools Co.
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LET US RIVET YOUR SAMPLES

If a cold riveting problem is confronting you, why bother your head about it? Just get together several assemblies and a quantity of loose rivets and send them along to Riveting Headquarters. We will rivet and return them promptly together with guaranteed production time.

There's a "High-Speed" for any rivet from the smallest to 2½" diameter —10 sizes in all.

Write or send samples, no obligation whatever

High Speed Hammers for Riveting, Flanging, Flattening, Swaging

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Write for catalog "H" on Dressers and Cutters—no obligation

THE DESMOND-STEPHAN MFG. CO.
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● USE LAYOUT FLUID ●

for general machine shop and tool room use on dies, jigs, fixtures, and machined parts.

With the use of the die blue layout fluid, you do not have to polish the surface of work. Simply wipe surface fairly clean and brush on. DRIES INSTANTLY.

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New Drill Grinding Attachment

fits the Black & Decker Grinders, gives you a correct grinding of twist drills.

PRICE ONLY $18. *Why not own one that you may be able to grind your twist drills the way they should be ground.*

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SENECA FALLS
Automatic
WORK DRIVER

Self Centering . . . Quick Acting . . . No slip. Attaches to any chuck plate or spindle. Provides a slip-proof, balanced drive reducing chatter. Handles rough forgings or turned pieces—straight or taper. Eliminates dogging time. Reduces tool breakage. Write for details and size range.

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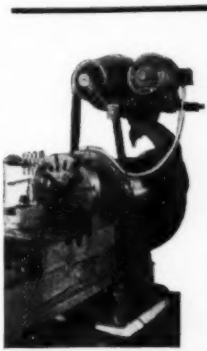
"Custom-Built" Motor Drives . . .

at the cost of "standard units" —engineered by Berkeley — "tailor-made" to your exact requirements.

Cut operating costs at least 25% by modernizing your machine tools with individual motor drives by Berkeley.



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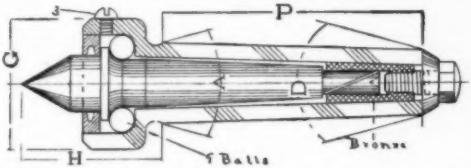
RIGID CENTERS DOUBLY RESILIENT



THE Ordinary Dead Center is much larger and stronger than the Live spindle of the Rigid Center, but will break in service much quicker. When we arrived at the Cleveland Machine Tool Show, (Sept. 1935) we found 5 Lathes idle, having twisted off, or broken their own dead Centers. We started all with Rigid Resilient Live Centers, and they are still running.

They are Axially Resilient due to their Undercut necks and Radially so, due to the tapering rear-ends of their spindles.

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Cast YOUR Hammers with the FIELD MOULD and LADLE

Soft-metal hammers are invaluable for hard blows on highly polished surfaces. Make your own with this handy tool. Low cost, simple operation. Write for details and prices.

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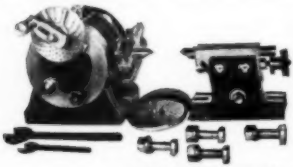

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Universal Dividing Heads

Twenty Years of Popularity.

6-inch, 10½-inch and 12-inch swing. Furnished either Right or Left hand type, for all makes of plain or universal milling machines.

See your Dealer or write for bulletin showing complete line.

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Portable Elevating Tables

This table is operated by a strong sturdy hydraulic unit. A press of the foot lever causes the tablet to raise. Press on the release valve the table slowly drops to the required height. Now over 600 in use. 30" minimum height; 45" max. height; 24x30 table, carrying capacity 2000 lbs.

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Champion Emery Wheel Dressers and Cutters

(Superior in quality and design)

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The Western Tool & Mfg. Co.
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ONE LIBERT SHEAR—NOT SEVERAL SHEARS!

Meets all requirements for cutting IRREGULAR SHAPES—standard equipment furnished for ring and circle cutting.....absolutely accurate and easily operated ..... metal is sheared and not punched ..... cut anywhere, no starting holes required for inside cutting ..... only one adjustment for various thicknesses of material used ..... unobstructed cutting vision ..... no further finishing required. No special cutters, pilots, templates, or strippers are needed...long life shear blades.

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Manufacturers of shears since 1915

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10 DAY FREE TRIAL OFFER

Motors, generators, converters, all intricate electrical equipment, delicate machinery, stock bins, line shafts, etc. The Clements-Cadillac Portable Electric Blower converts instantly into a Suction Cleaner or Sprayer of equal efficiency.

Investigate today.

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WHY NOT MODERNIZE

your present equipment, by using the RUSSELL BORING BAR? Bores holes from 9/16" to 12" dia. with axis of boring bar parallel to axis of the shank, in one compact tool, with micrometer adjustment.

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Contract Centerless Grinding
Accuracy—Prompt Service

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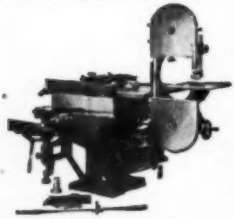

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Quality Woodworker

4 Machines at the price of ONE.

A Band Saw, Saw Table, Jointer and Mortiser, For Pattern Shop, Shipping Room or Elsewhere—Portable!

THE TANNEWITZ WORKS, Grand Rapids, Mich.

FASTER, MORE POWERFUL GRINDER

Wt. 5 lbs.
Air Driven

38,000 R.P.M.
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Saves grinding time. New Onsrud air-turbine Grinder provides extra power for heavy cuts. Speeds work. Gives extra smooth finish. Always runs cool. Vibrationless. Beautifully balanced. *Circular on request.*

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Pioneer Builders of High Speed Air Turbines
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Comet Vernier Caliper

Measures to .001" Outside, Inside and Depth

Measuring range 5-5/16".

Total length 8".

Scales: 1/16" with vernier 1/128".
.025" with vernier 1/1000".

Decimal equivalents on reverse side of gage.

Glass-hard jaws.

Fine workmanship.

A precision tool at a reasonable price.

$5.50 with genuine leather pocket case.

Send for one today!
Shop agents, dealers wanted.

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Standardized set-up appliances

Why force your men to waste time on machine tool table set-ups when CAD standardized appliances will convert this non-productive time into productive labor?

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Set-up appliances for machine tools
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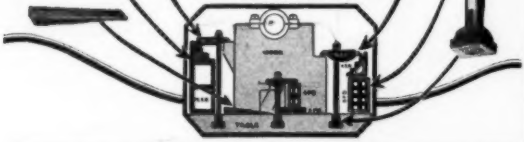

Sheet Metal Cut To ANY Size Or Shape

THE BEVERLY is made in two sizes: No. 1, weighs 16½ lbs., cuts up to 14 gauge. No. 2, weighs 32 lbs., cuts up to 10 gauge.

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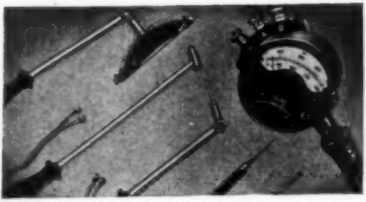

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Suitable for any surface or inside temperature readings.—A single indicator with FOUR different interchangeable elements. Write for special bulletin 60-A.

The Pyrometer Instrument Co.
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TEMCO PORTABLE ELECTRIC DRILLS

Will give you more power and performance at a lower price.

Made in ¼", 5/16", ⅜", ½", ⅝", ¾" capacities.

Write for complete information and prices.

TEMCO ELECTRIC MOTOR CO.
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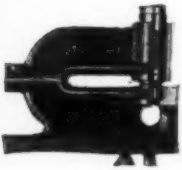
WALES ADJUSTABLE HOLE PUNCHING DIES



are individual sub-press type units which can be mounted in groups to punch almost any arrangement of holes in flat sheets. Operate in press or press brake. Capacity of standard dies ⅞" holes in 14 gauge or under. Also square and Vee notching dies.

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THE STRIPPIT CORPORATION
1559 Niagara., Buffalo, N. Y.

BEFORE BUYING...

Check These Vital Points:

1—Size and shape of bearing block?

2—Overhang or distance from shank to boring bars?

3—Simple or complicated design?

4—Accuracy and readability of dial screw?

5—Range of boring jobs?

6—Are boring bars, wrenches, etc. included?

7—Is the price reasonable?

CRALEY OFF-SET BORING HEADS meet all your requirements. Made in 7 sizes for everything from the smallest holes up to 20" diameter.

Write for full information.

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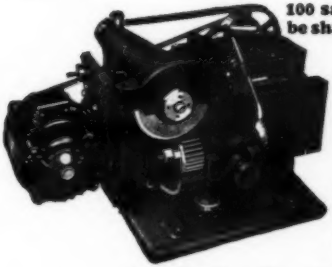
WARDWELL No. 35T AUTOMATIC SAW SHARPENER

Sharpens Metal Saws in Gangs



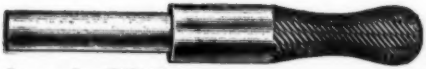
100 saws of 26 gauge can be sharpened at one time

Milling, Slitting and Screw Slotting saws from 2" to 5½" diameter can be sharpened in gangs up to 1¾" in thickness, with tooth spacing up to ¾".

The saws are automatically indexed and sharpened within a variation of plus or minus .001 of exact diameter of entire lot.

Circular Free Upon Request

WARDWELL MFG. CO. 3165 Fulton Rd., CLEVELAND, O.



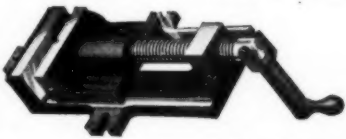
Ask for catalog RW illustrating a great many shapes and sizes of rotary files and rasps.

Ask also for catalog NW, illustrating more than 4000 different precision Swiss files.

GROBET FILE CORP. OF AMERICA
3 Park Place, New York City

Eliminate Special and Costly Drill Jig Fixtures

By Using YOST Drill Press Vises



Heavily constructed, with flanges on base for easy attachment. "V" shaped slot holds vertical work securely.

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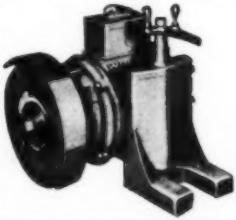
YOST MFG. CO., **Meadville, Penna.**

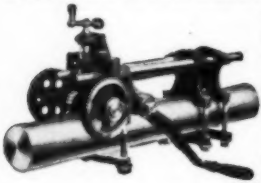
The New WODACK
Angle Plate Grinders



For use on lathes, milling machines, planers, etc. Precision ball bearings in dust proof housings. Dynamically balanced rotor. Nickel steel spindle. Large oil reservoirs and air cleaned motor ventilation. Boiler plate wheel guard. Made in various sizes, in horiz. and vertical feed types. Also vertical cup grinders. Send for bulletin 372

WODACK ELECTRIC TOOL CORP.
4629 W. Huron Street, Chicago, Ill., U. S. A.

BURR Portable Keyseaters



Indispensable for repair and maintenance work. BURR keyseaters mill keyways in the run or on the ends of shafts while they are still on the machine —accurately, quickly, economically— and save the necessity of taking down large shafts and housings. Made in 7 sizes, hand or power driven.

JOHN T. BURR & SON
429 Kent Ave., Brooklyn, New York

DRILL CHUCKS

With Hardened Steel Jaws

Capacity 0 to ½" fitted with No.1 or No. 2 Morse taper shank . $1.25 ea.

No. 1 or No. 2 Morse taper shanks with ½" x 24 thread .... 73c ea.

Chucks without shanks ... 52c ea.

WHY PAY MORE?

MADE BY

NIELSEN, INC.

LAWTON, MICH.

UNIVERSAL DRILL BUSHINGS

MADE TO A. S. A. SIZES
MEET ALL YOUR REQUIREMENTS
WITH A 10% SAVING IN COST

INTERCHANGEABLE
LONG-LIFE
EASILY
REPLACEABLE
PROMPT SERVICE

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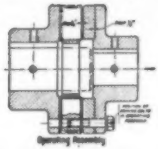

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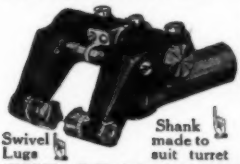

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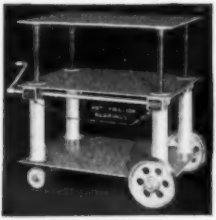

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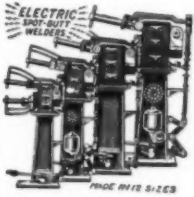

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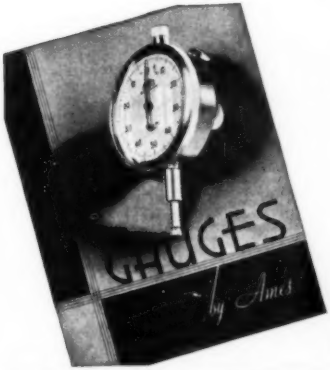

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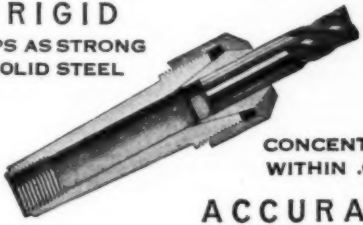

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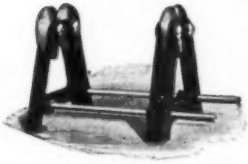

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Oliver Machinery Co., Grand Rapids, Mich.
Tannewitz Works, Grand Rapids, Mich.
Wells Mfg. Co., Three Rivers, Mich.

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Sterling Factory Eqpt. Co., Providence, R. I.

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Buffalo Forge Co., Buffalo, N. Y.
Clements Mfg. Co., 6650 Naragansett, Chicago
General Blower Co., 431 N. Peoria St., Chicago
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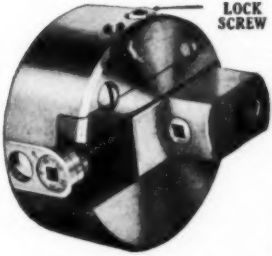

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Morrison Mach. Products, Inc., Elmira, N. Y.

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Heuser Mfg. Co., 1638 N. Paulina, Chicago
Universal Eng. Corp., Frankenmuth, Mich.

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Tomkins-Johnson Co., Jackson, Mich.

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Procunier Safety Chuck Co., 14 S. Clinton St., Chicago

Chucks, Collet
Apex Machine Co., Dayton, Ohio
Procunier Safety Chuck Co., 14 S. Clinton St., Chicago
Tomkins-Johnson Co., Jackson, Mich.

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Errington Mech. Labo., Staten Island, N. Y.
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Hartford Special Mchy. Co., Hartford, Conn.
Nielson, Inc., Lawton, Mich.
Procunier Safety Chuck Co., 14 S. Clinton St., Chicago
Scully-Jones & Co., 1905 S. Rockwell, Chicago

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Chicago Die Casting Mfg. Co., 2502 W. Monroe St., Chicago, Ill.
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Modern Machine Tool Co., Jackson, Mich.
Scully-Jones & Co., 1905 S. Rockwell, Chicago

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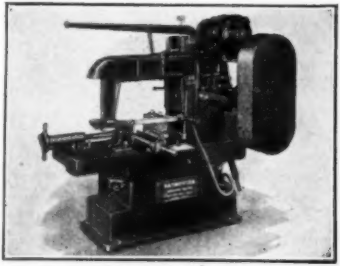

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Master Machine & Tool Co., North Kansas City, Mo.

Dowel Pins, Steel
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Baumbach Mfg. Co., E. A., 1812 So. Kilbourne Ave., Chicago

Draftmens Tables
Hamilton Mfg. Co., Two Rivers, Wis.

Dressers, Angle Tangent to Radius
Vinco Tool Co., Detroit Mich.

Dressers, Emery Wheel
Oliver Motorcraft Corp., [illegible] S. Wabash, Chicago

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Universal Eng. Corp., Frankenmuth, Mich.

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SpeedWay Mfg. Co., 1822 So. 52nd Ave., Cicero, Ill.
Standard Electrical Tool Co., Cincinnati, O.
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Wodack Electric Tool Corp., 4629 W. Huron St., Chicago, Ill.

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Rockford Drilling Mchs. Co., Rockford, Ill.

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Strand Co., N. A., 5001 N. Wolcott Street Chicago, Ill.
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White Dental Mfg. Co., 10 E. 40th Street, New York, N. Y.
Wodack Electric Tool Corp., 4629 W. Huron St., Chicago

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Buffalo Forge Co., Buffalo, N. Y.

Drilling Machines, Radial
Western Machine Tool Wks., Holland, Mich.

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Ayer Mfg. Co., Chicago Heights, Ill.
Buffalo Forge Company, Buffalo, N. Y.
Burke Machine Tool Co., Connesut, Ohio

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Ayer Mfg. Co., Chicago Heights, Ill.

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Royersford Foundry & Machine Co., Royersford, Pa.

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Hardinge Brothers, Inc., Elmira, N. Y.

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Oliver Motorcraft Corp., [illegible] S. Wabash, Chicago
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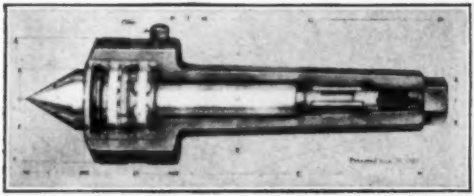

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Mall Tool Co., 7742 S. Chicago Ave., Chgo
Wysenbeek & Staff, Inc., 642 Washington Blvd., Chicago

Flexible Shaft Couplings
Lovejoy Flex. Coupling Co., 5026 Lake, Chgo.
W. H. Nicholson & Co., Wilkes-Barre, Pa.

Flexible Shaft Machinery
Haskins Co., R. G., 4654 W. Fulton, Chgo.
Mall Tool Co., 7742 S. Chicago Ave., Chgo.
Pratt & Whitney, Hartford, Conn.
Walker-Turner Co., Plainfield, N. J.
Wysenbeek & Staff, Inc., 642 Washington Blvd., Chicago

Floating Holders
Gairing Tool Co., Detroit, Mich.

Fine Lathes
Marshalltown Mfg. Co., Marshalltown, Ia.

Fine Welders
Marshalltown Mfg. Co., Marshalltown, Ia.

Forgings, Hollow Bored
American Hollow Boring Co., Erie, Pa.

Forming Tools
Banner Mfg. Co. 1878 Clybourn Av., Chgo.
Michigan Tool Co., Detroit, Mich.

Furniture, Machine Shop
Standard Pressed Steel Co., Jenkintown, Penna.
Western Tool & Mfg. Co., Springfield, O.

Gages
Chicago Dial Indicator Co., 190 Wacker Drive, Chicago
Federal Products Corp., Providence, R. I.
United Precision Products Co., 4618 W. Huron St., Chicago

Gages, Chrome Plated
Vinco Tool Co., Detroit, Mich.

Gages, Gears, Spur and Helical
Vinco Tool Co., Detroit, Mich.

Gages, Pin, Plug, Ring and Snap
American Tool Works, Inc., Hartford, Conn.
Standard Gage Co., Poughkeepsie, N. Y.
United Precision Products Co., 4618 W. Huron St., Chicago

Gages, Pressure
Marshalltown Mfg. Co., Marshalltown, Ia.

Gages, Special
Standard Gage Co., Poughkeepsie, N. Y.

Gages, Taper
Hartford Special Mchy. Co., Hartford, Conn.
Vinco Tool Co., Detroit, Mich.

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Chicago Gear Wks., 769 W. Jackson, Chgo.
Taylor Machine Co., Cleveland, Ohio

Gears, Master
Vinco Tool Co., Detroit, Mich.

Gear Motors
Star Mchs. & Eng. Co., Bloomfield, N. J.

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Janette Mfg. Co., 552 W. Monroe St., Chgo.
Star Mchs. & Eng. Co., Bloomfield, N. J.

Grease Cups
Essex Brass Corp., Detroit, Mich.

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M-B Products, Detroit, Mich.
Osgood Machine Works, Inc., 2906 Palmer St., Chicago

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Baldor Electric Co., St. Louis, Mo.
Vonnegut Moulder Corp., Indianapolis, Ind

Grinders, Disc
Oliver Machinery Co., Grand Rapids, Mich
Wysenbeek & Staff, Inc., 642 Washington Blvd., Chicago

Grinders, Electric
Chicago Wheel & Mfg. Co., 1101 W. Monroe St., Chicago, Ill.
Dremel Mfg. Co., Racine, Wis.
Skilsaw, Inc., 3304 Elston Av., Chicago, Ill.
Standard Electrical Tool Co., Cincinnati, O.
Wodack Electric Tool Corp., 4629 W. Huron St., Chicago

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Mall Tool Co., 7742 S. Chicago Ave., Chicago
N. A. Strand & Co., 5001 N. Wolcott, Chgo

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Vonnegut Moulder Corp., Indianapolis, Ind.

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M-B Products, Detroit, Mich.
Walker-Turner Co., Plainfield, N. J.

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Vonnegut Moulder Corp., Indianapolis, Ind.

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Oliver Machinery Co., Grand Rapids, Mich.
Royersford Foundry & Machine Co., Royersford, Pa.

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Wodack Electric Tool Corp., 4629 W. Huron St., Chicago

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Carlson Mfg. Co., C. H., Minneapolis, Minn.
Oliver Instrument Co., Adrian, Mich.

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Industrial Centerless Grinding Co., Detroit
Porter Machine Co., Cincinnati, O.

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Berkeley Engineering Co., Cleveland, O.

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Armoglo Co., Milwaukee, Wis.
Production Machine Co., Greenfield, Mass.
Wells Sales Corp., 96 Warren St., New York

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Gallmeyer & Livingston Co., Grand Rapids, Mich.
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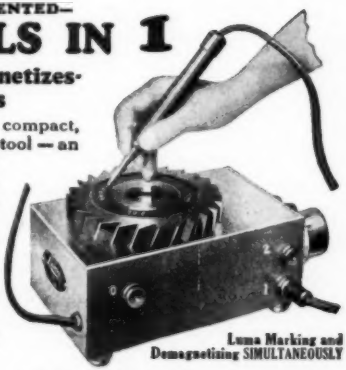

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National Machine Tool Co., Racine, Wis.
Onsrud Machine Works, Inc., 2906 Palmer St., Chicago

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Dumore Co., Racine, Wis.
Haskins Co., R. G., 6854 W. Fulton, Chgo.
Mall Tool Co., 7742 S. Chicago Ave., Chicago
National Machine Tool Co., Racine, Wis.
Pratt & Whitney, Hartford, Conn.
Strand Co., N. A., 5001 N. Wolcott St., Chgo.
White Dental Mfg. Co., 10 E. 40th Street, New York, N. Y.

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Gallmeyer & Livingston Co., Grand Rapids

Grinding Machines, Tap
Gallmeyer & Livingston Co., Grand Rapids

Grinding Machines, Tool
Rogers & Co., Buffalo, N. Y.

Grinding Machines, Universal
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Grinding Wheels
Chicago Wheel & Mfg. Co. 1101 W. Monroe St., Chicago, Ill.

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Chicago Wheel & Mfg. Co. 1101 W. Monroe St., Chicago, Ill.

Grinding Wheels On Shanks
Chicago Wheel & Mfg. Co. 1101 W. Monroe St., Chicago, Ill.

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Hack Saw Machines
Armstrong-Blum Mfg. Co., 5741 Bloomingdale Ave., Chicago
Rasmussen Machine Co., Racine, Wis.
Royersford Foundry & Machine Co., Royersford, Pa.
Wells Mfg. Corp., Three Rivers, Mich.

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Wedack Electric Tool Corp., 4829 W. Huron St., Chicago, Ill.

Hammers, Tinners
Whitney Mfg. Co., W. A., Rockford, Ill.

Hammers, Mallets and Malls
Chicago Rawhide Mfg. Co., 1250 Elston Av., Chicago, Ill.

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High Speed Hammer Co., Rochester, N. Y.

Hammers, Soft Faced
Greene Tweed & Co., 109 Duane St., New York, N. Y.

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Hand Saws, Portable Electric
Sillaw, Inc., 3304 Elston Av., Chicago, Ill.

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Hangers
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Flynn Manufacturing Co., Detroit, Mich.

Hobs
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Gairing Tool Co., Detroit, Mich.

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Standard Pressed Steel Co., Jenkintown, Pa.

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Hanna Engineering Works, 1763 Elston Ave., Chicago, Ill.
W. H. Nicholson & Co., Wilkes-Barre, Pa.

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Wm. Carroll & Son, Norwood, Cincinnati, O.

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Chicago Dial Indicator Co., 180 Wacker Drive, Chicago
Standard Gage Co., Inc., Poughkeepsie, N. Y.

Indicating Dials
Federal Products Corp., Providence, R. I.

Indicators, Speed
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Indicators, Surface Test
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Hamilton Tool Company, Hamilton, Ohio
Hartford Special Mchr Co., Hartford, Conn
Henderson & Kaye, Batavia, Ill.
Slowek Tool Co., Detroit, Mich.

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Sturdimatic Tool Co., Detroit, Mich.

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Cullman Wheel Co., 1840 Altgeld St., Chgo.
Hardinge Brothers, Inc., Elmira, N. Y.

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Delta Mfg. Co., Milwaukee, Wis.
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South Bend Lathe Works, South Bend, Ind.

Lathes, Brake Drum
South Bend Lathe Works, South Bend, Ind.

Lathes, Engine
South Bend Lathe Works, South Bend, Ind.
Western Machine Tool Wks., Holland, Mich.

Lathes, Polishing and Buffing
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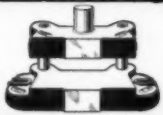

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Schauer Machine Co., Cincinnati, Ohio

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Milling Machine Attachments
Berkeley Engineering Co., Cleveland, O.

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Hardinge Brothers, Inc., Elmira, N. Y.

Milling Machines, Precision Bench
Hardinge Brothers, Inc., Elmira, N. Y.

Milling Machines, Hand
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Milling Machines, Plain
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Johnson Tool Co., East Providence, R. I.

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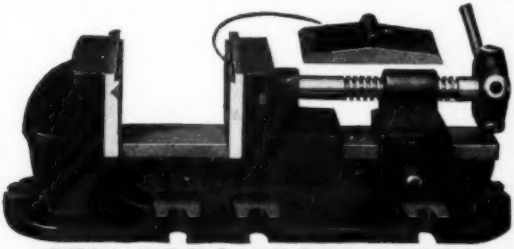

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Presses, Broaching
Greenerd Arbor Press Co., Nashua, N. H.

Presses, Foot
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Federal Press Co., Elkhart, Indiana
Rockford Iron Works, Rockford, Ill.

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Pumps, Lubricant
Ruthman Machinery Co., Cincinnati, Ohio

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Buffalo Forge Co., Buffalo, N. Y.

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Buffalo Forge Company, Buffalo, N. Y.
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Riveters, Automatic Feed
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Saw Sharpening Machines
Rogers & Co., Buffalo, N. Y.
Wardwell Manufacturing Co., Cleveland, O.

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Continental Mchs. Specialties, Minneapolis
Delta Mfg. Co., Milwaukee, Wis.
Groh Brothers, Grafton, Wis.
Rasmussen Machine Co., Racine, Wis.
Wells Mfg. Co., Three Rivers, Mich.

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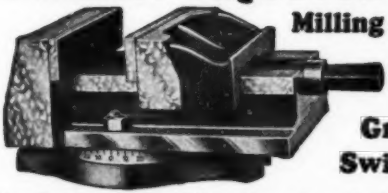

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In Ordering this Vise give size of slot in table

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Brown & Sharpe Mfg. Co., Providence, R.I.

Set Screws
Standard Pressed Steel Co., Jenkintown, Pa.
Triplex Screw Co., Cleveland, Ohio

Set-Up Appliances
Standard Shop Equipt. Co., Inc., Phila., Pa.

Shafts, Flexible
R. G. Haskins Co., 4654 W. Fulton, Chicago
Pratt & Whitney, Hartford, Conn.
Strand Co., N. A., 5001 N. Wolcott St., Chgo.
White Dental Mfg. Co., 10 E. 40th Street, New York, N. Y.

Shafts, Hangers & Boxes
Delta Mfg. Co., Milwaukee, Wis.

Shafts, Steel
American Hollow Boring Co., Erie, Pa.

Shapers
Western Mchc. Tool Wks., Holland, Mich.

Shaping Machines
Osborne & Sexton Machy. Co., Columbus, O.
Western Mchc. Tool Wks., Holland, Mich.

Shears, Bevel
Marshalltown Mfg. Co., Marshalltown, Ia.

Shears, Hand
Armstrong-Blum Mfg. Co., 5741 Bloomingdale Ave., Chicago
Beverly Throttless Shear Co., 9007 W. 110th Place, Chicago, Ill.
Lewthwaite Machine Co., T. H., 311 E. 47th St., New York
The National Machine Tool Co., Racine, Wis.
Whitney Metal Tool Co., Rockford, Ill.

Shears, Power
Buffalo Forge Co., Buffalo, N. Y.
Dreis & Krump Mfg. Co., 7440 Loomis Blvd., Chicago, Ill.
Libert Machine Co., Green Bay, Wis.

Shears, Slitting
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Buffalo Forge Co., Buffalo, N. Y.
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National Machine Tool Co., Racine, Wis.

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Marshalltown Mfg. Co., Marshalltown, Ia.

Shears, Throttless
Beverly Throttless Shear Co., 9007 W. 110th Place, Chicago, Ill.
Marshalltown Mfg. Co., Marshalltown, Ia.

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Chicago Die Casting Mfg. Co., 2502 W. Monroe St., Chicago, Ill.
Master Lamp Co., Detroit, Mich.
Vimco Mfg. Co., Buffalo, N. Y.

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Standard Pressed Steel Co., Jenkintown, Penna.

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Robbins Engineering Co., Detroit, Mich.

Spacing Collars
Scully-Jones & Co., 1905 S. Rockwell, Chicago

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American Tool Works, Inc., Hartford, Conn.
Wrought Washer Mfg. Co., Milwaukee, Wis.

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Abart Gear & Mchc. Co., 4832 W. 16th St., Cicero, Ill.
Armgio Co., Milwaukee, Wis.
Chicago Gear Wks., 709 W. Jackson, Chgo.
Cullman Wheel Co., 1359 Altgeld St., Chgo.
Janette Mfg. Co., 552 W. Monroe St., Chgo.

Speed Saws, Universal
Wyzenbeek & Staff, Inc., 642 Washington Blvd., Chicago

Spinning Lathes, Metal
Oliver Machinery Co., Grand Rapids, Mich.

Spools & Nuts for Auto. Screw Mchs.
Sutton Tool Co., Detroit, Mich.

Split Rivets
Chicago Rivet & Machine Co., 1855 S. 54th St., Cicero P. O., Chicago, Ill.

Split Rivet Setters, Automatic Feed
Chicago Rivet & Machine Co., 1855 S. 54th St., Cicero P. O., Chicago, Ill.

Spot Welding Machines, Speed.
Armgio Co., Milwaukee, Wis
Elmer Engineering Co., Inc., Newark, N. J.
Interstate Machinery Co., Chicago, Ill.
Pier Equipt. Mfg. Co., Benton Harbor, Mich.

Sprockets
Cullman Wheel Co., 1359 Altgeld St., Chgo.

Stake Riveters
Marshalltown Mfg. Co., Marshalltown, Ia.

Stampings
Hamilton Tool Co., Hamilton, Ohio
Kreuzer & Hudepohl, Cincinnati, O.
Wrought Washer Mfg. Co., Milwaukee, Wis.

Steel Stamps
Colonial Hushings Co., Detroit, Mich.

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Meylan, A. R. & J.E., 206 W. 40th St., N.Y.C.

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Stachbin Corp., Providence, R. I.
Sterling Factory Eqpt. Co., Providence, R.I.
Yohe Supply Co., Canton, O.

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Whitney Metal Tool Co., Rockford, Ill.

Stripping Units
Stripplit Corp., Buffalo, N. Y.

Stud Setters
Apex Machine Co., Dayton, O.
Titan Tool Co., Fairview, Penna.

Surface Plates
Master Tapper Co., Newark, N. J.

Tables, Drawing
Hamilton Mfg. Co., Two Rivers, Wis.

Tables, Elevating
Midwest Tool & Engineering Co., Dayton, O.

Tap Extractors
Welton Co., Hartford, Conn.

Tap Holders
Procunier Safety Chuck Co., 14 S. Clinton St., Chicago
Scully-Jones & Co., 1905 S. Rockwell, Chicago

Tapping Machines
Ettco Tool Co., Brooklyn, N. Y.
Haskins Co., R. G., 4654 W. Fulton, Chgo.
Master Tapper Co., Newark, N. J.
Rickert-Shafer Co., Erie, Pa.
Western Mchc. Tool Wks., Holland, Mich.

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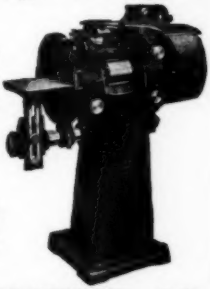

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Hesser Mfg. Co., 1658 N. Paulina St., Chgo.

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Cleereman Mchs. Tool Co., Green Bay, Wis.
Ritco Tool Co., 594 Johnson Av., Brooklyn, N. Y.

Procunier Safety Chuck Co., 14 So. Clinton St., Chicago, Ill.
Whitney Metal Tool Co., Rockford, Ill.

Terminal Lugs, Solderless
Krueger & Hudepohl, Cincinnati, O.

Thermometers, Resistance Type
Illinois Testing Laboratories, Inc., 150 West Austin Ave., Chicago, Ill.

Threading Machines, Automatic
Grant Mfg. & Mchs. Co., Bridgeport, Conn.
Jones & Lamson Mchs. Co., Springfield, Vt.
Rickert-Shafer Co., Erie, Pa.

Threading Tools
Armstrong Bros. Tool Co., 308 N. Francisco Av., Chicago
Ridge Tool Co., Elyria, Ohio.
Hivett Lathe & Grinder Inc., Brighton, Boston

Timing Instruments
Marian, A. H. & J. E., 266 W. 40th St., N. Y. C.

Tool Heads, Universal
Precision Tool Co., Bridgeport, Conn.

Tool Post Turrets
Colwell, S. G., Providence, R. I.

Tool Holders
Armstrong Bros. Tool Co., 308 N. Francisco Av., Chicago
Four Grip Tool Co., Paterson, N. J.
Michigan Tool Co., Detroit, Mich.
Rigid Toolholder Co., Detroit, Mich.
Western Tool & Mfg. Co., Springfield, O.

Tools
Vinco Tool Co., Detroit, Mich.
Wrought Washer Mfg. Co., Milwaukee, Wis.

Tools, Abrasive
White Dental Mfg. Co., 10 E. 40th Street, New York, N. Y.

Tools, Boring
Armstrong Bros. Tool Co., 308 N. Francisco Av., Chicago
Gairing Tool Co., Detroit, Mich.

Tools, Lathe and Planer
Armstrong Bros. Tool Co., 308 N. Francisco Av., Chicago
Four Grip Tool Co., Paterson, N. J.

Tools, Machinists'
Armstrong Bros. Tool Co., 308 N. Francisco Av., Chicago
Brown & Sharpe Mfg. Co., Providence, R.I.
Four Grip Tool Co., Paterson, N. J.

Tools, Multi-Diameter
Gairing Tool Co., Detroit, Mich.

Transfer Punches
McMahon Co., Frank, Dayton, Ohio

Tube Fittings
Noox Brass Corp., Detroit, Mich.

Tube Flanging Machines
Grant Mfg. & Mchs. Co., Bridgeport, Conn.

Tubular Rivet Setters, Automatic Fd.
Chicago Rivet & Machine Co., 1855 S. 54th St., Cicero P. O., Chicago, Ill.

Tungsten Carbide Tools
Michigan Tool Co., Detroit, Mich.

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H & L Tools, Philadelphia, Pa.

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Hesser Mfg. Co., 1658 N. Paulina St., Chgo.

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Apex Machine Co., Dayton, O.
Chicago Gear Works, 769 W. Jackson Blvd., Chicago

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Abbott Tool & Equipment Co., 30 S. Clinton St., Chicago, Ill.
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Bennet-Rafkin Machine Tool Corp., 30 Church St., New York, N. Y.
Bernstein & Co., Geo. M., 128. Clinton, Chgo.
Bisser Mfg. & Mchy. Co., Springfield Ill.
Bradley Machinery Co., Detroit, Mich.
Brandt Mchy. Sales, Pittsburgh, Pa.
Brown Machinery Co., St. Louis, Mo.
Brownell Machinery Co., Providence, R. I.
Burns Mchy. Co., F. W., Milwaukee, Wis.
Central Machine Tool Corp., Toledo, O.
Cincinnati Mchy & Supply Co., Cincinnati, O.
Cleveland Planer Co., Cleveland, O.
Clinton Mchy. Sales Co., Detroit, Mich.
Crown Silver Co., Inc., Brooklyne, Mass.
Dalin, Harry, Cleveland, O.
Davis Machinery Co., Toledo, O.
Dell, Frank M., Indianapolis, Ind.
Delta Equipment Co., Philadelphia, Pa.
DeWitt Tool Co., 178 Grand St., N. Y. C.
Eastern Machinery Co., Cincinnati, O.
Emerman, Louis E. & Co., 1761 Sixten
Easley Machinery Co., E. L., 831 W. Evergreen Ave., Chicago, Ill.
Falk Mill Supply Co., Inc., Rochester, N.Y.
Fuchs Mchy. & Supply Co., Omaha, Nebr.
General Blower Co., 401 N. Peoria St., Chgo.
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Goldman, Harvey H., Detroit, Mich.
Hackett J. Lee, Detroit, Mich.
Hill, Clarke & Co., 646 W. Washington Blvd., Chicago, Ill.
Howarth Mchy. Co., Inc., C. C., Detroit, Mich.
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International Machinery Co., Detroit
Interstate Mchy. Co., 109 S. Clinton, Chgo.
Iroquois Machinery Co., Buffalo, N. Y.
Johnson & Sons Machinery Co., Wm. C., St. Louis, Mo.
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Kinney Co., E. A., Cincinnati, Ohio
Lafayette Tool & Supply Co., 226 Lafayette St., N. Y. C.
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Lucas, J. L., Bridgeport, Conn.
McDonald Machinery Co., St. Louis
Machinery Dealers, Inc., New Haven, Conn.
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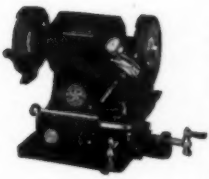
Mellitor Machinery Co., Charles L., 120 S. Clinton St., Chicago, Ill.
Morey & Co., 45 Mill St., Astoria, Long Island, N. Y.
Norton-Broadway Machinery Co., Cincinnati, Ohio
Nutmeg State Mchy. Corp., New Haven, Conn.
O'Brien Machinery Co., Philadelphia
Ohio Mchy. & Supply Co., Cincinnati, Ohio
Ott Machinery Sales Co., Detroit, Mich.
Osborne & Sexton Machy. Co., Columbus, O.
Partridge, Arthur S., St. Louis, Mo.
Passman Brothers, 705 W. Washington St., Chicago, Ill.
Preston Mchy. Co., D. H., Cleveland, Ohio



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Scott-Benshach Mchy. Co., 4607 W. 20th St., Chicago
Segal Machinery Co., 117 S. Clinton St., Chicago, Ill.
Service Co., Cleveland, Ohio
Simmons Machine Tool Corp., Albany, N. Y.
Standard Mchy. Co., Grand Rapids, Mich.
Strong, Carlisle & Hammond Co., Cleveland, Ohio
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Surplus Material & Machinery Co., Detroit
Surplus Stock & Mchy. Co., Inc., 618 W. Lake St., Chicago, Ill.
Toledo Machinery Exchange, Toledo, O.
United Mchry. & Supply Co., St. Louis, Mo.
Victor Machinery Co., 130 S. Clinton Street, Chicago, Ill.
Victor Machinery Exchange 251 Centre St., New York, N. Y.
Vino, R. A., Detroit, Mich.
Wain Mchy. Sales, Chas. E., Detroit, Mich.
Warner Elevator Mfg. Co., Cincinnati, O.
Wertman Machinery Co., Cleveland, Ohio
West Penn Machinery Co., Pittsburgh, Pa.
White Machy. Co., A. D., 108 N. Jefferson St., Chicago
Wigglesworth Machinery, T. R., Cleveland, O.
Wigglesworth Mchy. Co., Cambridge, Mass.
Wolnick Mchy. Sales, 9 S. Clinton, Chicago

Vacuum Cleaners, Portable

Breuer Elec. Co., 846 Blackhawk St., Chgo.

Vacuum Cleaners, Industrial

Breuer Elect. Co., 846 Blackhawk St., Chgo.

Valves, Air

Hanna Engineering Works, 1763 Elston Ave., Chicago, Ill.
Ross Operating Valve Co., Detroit, Mich.

Valves

Galland-Henning Mfg. Co., Milwaukee, Wis.
Hanna Engineering Works, 1763 Elston Chicago, Ill.
Ross Operating Valve Co., Detroit, Mich.

Valves, Foot, Lever & Solenoid

Hanna Engineering Works, 1763 Elston Chicago, Ill.
Nicholson & Co., W. H., Wilkes-Barre, Pa.
Ross Operating Valve Co., Detroit, Mich.

Valves, Operating

Hanna Engineering Works, 1763 Elston Chicago, Ill.
Ross Operating Valve Co., Detroit, Mich.
Tomkins-Johnson Co., Jackson Mich.

Vises, Combination Drill Table

Modern Machine Tool Co., Jackson, Mich.

Vises, Drilling Machine

Armstrong-Blum Mfg. Co., 5741 Bloomingdale Ave., Chicago
Armstrong Bros. Tool Co., 936 N. Francisco Av. Chicago
Desmond Stephan Mfg. Co., Urbana, O.
Graham Manufacturing Co., Providence, R. I.
Heuser Mfg. Co., 1634 N. Paulina St., Chgo.
Knu-Vise Products Co., Detroit, Mich.
L. W Chuck Co., Toledo, Ohio
Martin Tool & Die Works, J. E., Springfield, O.
Modern Machine Tool Co., Jackson, Mich.
National Machine Tool Co., Racine, Wis.
Odin Universal Corp., 110 S. Dearborn, Chgo.
Walker-Turner Co., Inc., Plainfield, N. J.
Yost Mfg. Co., Meadville, Penna.

Vises, Drill

Johnson Tool Co., East Providence, R. I.
Modern Machine Tool Co., Jackson, Mich.
Plunkat Mchs. Co., 1823 W. Lake St., Chgo.

Vises, Machinists'

Desmond Stephan Mfg. Co., Urbana, Ohio
Knu-Vise Products Co., Detroit, Mich.
L. W Chuck Co., Toledo, Ohio
Odin Universal Corp., 110 S. Dearborn, Chgo.
Western Tool & Mfg. Co., Springfield, O.
Yost Mfg. Co., Meadville, Penna.

Vises, Milling Machine

Graham Manufacturing Co., Providence, R. I.
Hartford Special Mchy. Co. Hartford, Conn.
Knu-Vise Products Co., Detroit, Mich.
L. W Chuck Co., Toledo, Ohio
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Yost Mfg. Co., Meadville, Penna.

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I. W Chuck Co., Toledo, Ohio
Odin Universal Corp., 110 S. Dearborn, Chgo.
Plunkat Mchs. Co., 1823 W. Lake St., Chgo.

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Modern Machine Tool Co., Jackson, Mich.

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Welders, Arc

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Hobart Brothers, Troy, Ohio

Welding Accessories

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Welding Generators, Arc

The Lincoln Electric Co., Cleveland, O.

Welding Goggles

The Lincoln Electric Co., Cleveland, O.

Welding Lens, Arc

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Eister Engineering Co., Inc., Newark, N. J.
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Interstate Machinery Co., Chicago, Ill.
Pier Equipment Mfg. Co., Benton Harbor.

Welding Machines and Equipment, E. I. Arc

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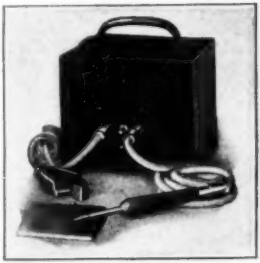

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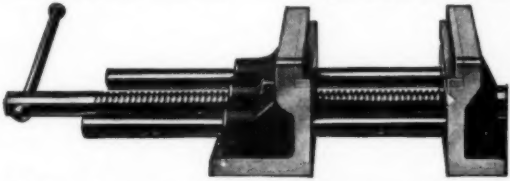

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Automatic, New Britain 1″x5″.
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Grinder, No. 6 Bryant internal.
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Lathe, Sidney, 19″x10′, m. d.
Lathe, LeBlond rapid production.
Miller, No. 33 Kempsmith.
Miller, No. 12 B. & S.
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Drill, 36" Snyder sl. hd. back grd.
Drill, Avey 2 spdl. h. s., b. brg.
Drill, Colburn, No. 2 hvy. duty 4 spdl.
Drill, Sipp 4 spdl. h. s., b. brg.
Grinder, Bath, universal, comp. att.
Lathe, 14"x6' Monarch q. c. g.
Lathe, 28"x12' Boye & E. q.c.g., t.a.
Lathe, 36"x12' Hamilton l. c. g.
Mill, No. 2A Garvin univ. compl. c.p.
Mill, model C Becker vertical c. p.
Mill, No. 3 Kempsmith plain, c. p.
Mill, No. 4 Cinc., hi. pwr. pl., c. p.
Mill, No. 2B Brown & Sharpe plain.
Planer, 36"x36"x8' American, 2 hds.
Press, 30 ton Lucas vert. forcing.
Press, No. 53 Toledo SS.
Screw machine, No. 3 Foster hand.
Shaper, 20" Ohio crank, b. g.
Shaper, 24" Potter & Johnston univ.
Shaper, 24" Gould & E. high duty.

FOR SALE BY

J. L. Lucas & Son, Inc., - 3 Fox St., - Bridgeport, Conn.

Boring mill, 3½" Landis table type, arr. m. d. ..... 85000.
Boring mills, 3" Lucas, 3" Defiance—write for price.
Crane, cab, 50', 10 ton, a. c. motors ..... 1000.
Cutoff saws, new, 12" to 48" in diameter.
Grinder, No. 13 B. & S. tool and cutter ..... 1250.
Grinder, No. 33 Abrasive, 16" rotary chuck ..... 1000.
Hammer, 300 lb. Standard automatic drop ..... 750.
Lathes, 16"x8' P. & W. geared head ..... 800.
Mill 96" Pond vert., 2 heads ..... 2000.
Press, 57T and 58T Niagara trimming, each ..... 650.
Press, o.b.i., No. 8 Waterbury Farrel ..... 925.
Press, 300 ton Elmes vert. hydraulic (2) ..... each 850.
Screw machines, hand, No. 2 W. & S. (7) ..... each 250.
Shaper, 14" Gould & Eberhardt, cone drive ..... 425.
Shaper, 16" Gould & Eberhardt, back geared, (4) ..... each 525.
Shaper, 20" Stockbridge, m. d., 3 ph. 60 cy 220 v ..... 850.
Shaper, 24" Gould & Eberhardt ..... 950.
Shear, circle, 42"x¼ Lennox ..... 1000.
Shear, gap, 48" E. F. Cleveland ..... 750.
Shear, gap, E. F. Cleveland double end ..... 1250.

FOR SALE BY

Brown Machinery Co., - - 2333 N. 9th St., St. Louis, Mo

Brake, Chicago Steel, 8' 18 gauge.
Die filer, Oliver S-1, m. d.
Drills, 14, 16, 20, 22, 24 & 42"
Drill, rail, Foote-Burt, 4-spindle.
Drills, 16 & 20 spindle Natco.
Grinders, cylinder, Madison, No. 65 Heald.
Grinders, cylindrical, 12"x42" and 10"x30" Landis.
Grinders, disc, No. 6-20 Besly; No. 220 Badger automatic.
Hammers vert. 40 lb. Perfect and Bradley, 120-lb. Kane & Roach.
Lathes, 26"x12' Putnam, taper att.; 18"x8½' Rahn-Mayer; 18"x8' L. & S., pat. head; 16"x6' Bradford.
Lathes, tur., 16", 21", 24" Gisholt.
Millers, plain, No. 3 Kempsmith; 3½ Fox; 3-B Owen.
Millers, universal, No. 2 Hendey-Norton; Lincoln type, No. 4 Hendey; slab, Briggs type No. 11.
Planer, 42"x42"x18' Putnam, 3 hds.
Planer, 30"x30"x6' Whitcomb.
Presses, straightside, No. 7 Zeh & Hahnemann.
Press, 300-ton Hydraulic Press Co., vertical.
Presses, o. b. i. Nos. 1, 2, 3, 4 Loshbough-Jordan.
Punches, sgl. end, Cleveland "C" 26" thr. ⅝ in ⅝"; Rock River Style L rapid action, 24" thr. ½" in ½".
Punch & shears, dble. end, No. L-10 Badger 10" thr. ⅝ in ⅝".
Riveters, Grant ⅝" 18" throat, M. D.
Saw, cold, Higley No. 14.
Screw machines., No. 2½ P. & W.; 1x15" P. & W.
Shapers, 20" Smith & Mills; 20" Cincinnati.
Shear, rotary bevel, ⅝" Lennox.
Shear, jig, Gem, m. d.
Shear, sq., 9 ft. Stark, 18 ga.

USED AND REBUILT MACHINERY

FOR SALE BY

West Penn Machinery Company

1210 House Building. • • Pittsburgh, Pa.

Air compressors, 30 to 2500 cu. ft.
Blower, No. 4 Roots, cap. 2110 c.f.m.
Bolt cutter, Acme 2", belt drive.
Boring mill, hor. 3" G. & L. s. p. d.
Boring mill, 42" King, b. d.
Boring mill, hor. 5" Betts m. d.
Boring mill, 62" Betts, 2 heads, b. d.
Boring mill, 10'—16' Betts, m. d.
Bor. mill, hor. 5" bar Barrett. m. d.
Brake, 7'x10 ga. D. & K. m. d.
Brake, 10-18 ga. hand.
Bulldozers, Nos. 2, 4, 6, 9, 28, & 30.
Crane, 5-ton Case, 65' span, 220-d.c.
Crane, 7½-ton Morgan, 220-d. c.
Crane, crawler, gas., No. 2 No'wes.
Draw bench 20000 lb. W-F.
Drill, radial, 4' Prentice, t. a., b. d.
Drill, rad. 5' Cincinnati-Bick., m. d.
Drill, radial, 5' American, s. p. d.
Drill, rad. 6' Reed-Prentice, s. p. d.
Drill, mult. 24 sp. No. 30 Natco.
Drills, upright 10" to 36".
Drill, press, 6 spindle Allen.
Engine, gas, 20 h. p. Bessemer.
Flanger, McCabe, ¼" capacity, dies.
Gear cutter, 18-H G. & E.
Gear cutters, 11", 18" & 24" Gleason.
Gear tester, bevel 18" Gleason.
Grinder, No. 55 Heald, b. d.
Grinder, roll, Farrel 28"x64".
Grinder, d. e. 2 h. p. 220/440/3/60.
Grinder, D.E., 3 H P. 220/3/60.
Grinder, disc, No. 8—20" Besly, b. d.
Grinder, disc, No. 4 Gardner, m. d.
Grinder, 12x42" Landis univ.
Grinder, surface 8" Heald.
Grinder, sur. 14" Pratt & W., m. d.
Grinder, surf. Diamond, table 48x16".
Grinder, int. No. 60 Heald, b. d.
Grinder, 12"x72" Landis m. d.
Hammer, power, 50-lbs. Blacker.
Hammer, power, 90-lb. Justice, b. d.
Hammer, pwr., 100 lb. Brad. cush.
Hammer, Brad. 500 lb. upright.
Hammers, Nos. 2-B, 3-B, 4 B, Nazel.
Hammers, steam, forging & drop.
Keyseater, No. 2 M & M, b. d.
Lathe, 11"x5' Meyers, p. c. g., b. d.
Lathe, 16"x6' Fosdick, d. b. g., q. c. g.
Lathe, 18"x8', L. & S., b. d.
Lathe, 22"x12' R-L q. c. g., d. b. g.
Lathe, 24"x15' Prentice, grd. hd.
Lathe, 42"x16' S. B., q. c. g., b. d.
Lathe, spinning 32" b. d.
Lathes, turret, No. 4 W & S. b. d.
Lathe, turret, No. 6 W & S, grd. hd.
Lathes, No. 2 W. & S. turret, b. d.
Lathe, turret, No. 2A, W. & S., m. d.
Miller, vert. No. 6 Becker, m. d.
Mixers, Sprout-W., batch & liquid.
Motors, a. c. & d. c.
Nibbler, No. 1 Gray 3/16", 24" thrt. bd
Nut tapper 8 sp. 1" National.

Pickler, 4 arm Mesta, 10' radius.
Pipe machine, 2" Landis, b. d.
Pipe mach., 2", 6", 8", 12" Williams, md.
Planer, 36x36x10' Cincin. b. d.
Planer, 42x42"x12' Cinc., 3 hds., b. d.
Planer, 60x60x20' Pond m. d.
Press, No. 20B Bliss, OBI.
Press, No. 5 L. & J. OBI.
Press, cam, No. 69N Bliss, dbl act. inc.
Press, horn., No. 43 Toledo 1½" str.
Press, hyd. 100-ton Southwark.
Press, hyd. 300-ton Oilgear.
Press, No. 55 Toledo, bed 20x19.
Press, No. 58 Toledo, 6" stroke.
Press, sgl. crank, No. 77½ Bliss, bd.
Press, No. 78½ Bliss, str. 10" tie rod.
Press, dbl. crank No. 5 Bliss, 2" str.
Press, gap, No. 74 Bliss consolidated
Press, No. 6 Niagara, o. b. i. grd.
Press, No. 7-A Niag., o. b. i. grd.
Press, screw, No. 87 Niagara.
Press, 6 spindle, W-F.
Punch, Rock River, ¼"-¾".
Punch, E F Cleveland, 36" thrt., 1½"-1"
Pumps, Cent. 6", 4", 1", m. d.
Riveters, air, hammer, spinning.
Rolls, angle, Nia. 1½x1½x½".
Roll, bend., South. 30"x1½" m. d.
Rolling mill, cold 9"x18".
Saws, friction, Nos. 2, 3 & 4 Ryerson.
Saw, cold, 48" Newton.
Saw, hack, Racine 6x6.
Saw, hack, Peerless, 13"x18", m. d.
Scale, sheet bundling, 2500 lbs.
Shapers, 16", 20", 24" & 36 G. & E.
Shears, alligator, 1½", 2", 3", 4" & 6".
Shear, angle 6x6x¾", Cleveland.
Shear, circle, Niagara, 4" cutters.
Shear, circle No. 3 Bliss, 40"x20 ga.
Shear, bar 1½", New Doty.
Shear, bar 2½" United. m. d.
Shear, bevel, Lennox 1¼", b. d.
Shear, throatless, ¾" Lennox b. d.
Shear, sq., No. 662 Nia.: 62"x10 ga. bmd
Shear, sq. No. 48 Exc. 14 ga. bls 53".
Shear, sq. 11'x10 ga. Niagara, m. d.
Shear, plate, 80"x¾" Pels.
Shear, plate, 60"x1" H. & J., m. d.
Shear, 24x¾" Bliss, b. d.
Shear, rotary 24" thrt. cap. ¾", m. d.
Shear, Buffalo all steel 3" sq., m. d.
Slitter, gang, 36" Braddock, b. d.
Slotters, 6" Newton, 8" & 21" Betts.
Slotter, 24" Newton, motor drive.
Straightener, AS&TP 12"x3/16", bd.
Straightener, 42" Aetna std. 17 roll 3¾".
Straight'r, 48" Aetna-Std 17 roll 3¾.
Straightener, Shuster, 12"x¾".
Straightener, 1½", 4" rd. Abramson.
Tumbling barrel, 34"x45", b. d.
Upsetters, 1" to 6".
Welder, 40 kw. Thom. 2 pcs. ¼".
Welder, butt 1½" Winfield.

USED AND REBUILT MACHINERY

FOR SALE BY

Wigglesworth Machinery Company

199 Bent Street, • • • • Cambridge, Mass.

Boring mill, No. 21 Lucas horizontal.
Boring mill, 2½" bar Cleveland.
Drill, D14 Colburn m. d., like new.
Lathe, 20" x 12' Monarch, grd. hd.
Lathe, 24"x15' American grd. hd.
Saw, Avey Milband, 6"x6" m. d.

Send for Complete Stock List.

FOR SALE BY

D. H. Prutton Mchy. Co., 5295 W. 130th St., Cleveland, Ohio

Automatic, Cleveland ⅞" model A.
Automatic, Cleveland 2¼" model A.
Chucker, ⅞" Cleveland model M automatic.
Drills, ½" cap. Demco 4 spindle, power feed, b. b. (3)
Gear hobbers, No. 0 and No. 1. Schuchardt & Schutte.
Grinder, disc, No. 120 Gardner.
Tappers, (5) Webster & Perks 5 spindle vertical.
Press, No. 106 Bliss.
Press, cam drawing, No. 1 Bliss.
Presses, No. 4 & 5 Zeh & H. incl.

FOR SALE BY

Lang Machinery Company, 28th St. & A. V. R. R. Pittsburgh, Pa.

Air comp. (2) W J 3 Sullivan, 480 c. f. 100 lb.
Automatics (4) No. 5-A Potter & J.
Automatic, 2½" cone 4 spdl. m. d.
Bolt cutters 1" Landis, 1½"&3"Acme.
Bor. mill, 30" Bullard, thrd. att., spd.
Bor. mill, 76" Bullard, 2 Hds. m. d.
Bor. mill, 84" Sellers, 2 hds. b. d.
Bor. mill, hor. 4½" bar Niles, s.p.d.
Bor. mill, hor. 6" N-B-P floor type.
Broach, No. 3 LaPointe, m. d.
Buffer & pol. 5 H. P. AC Marschke.
Die sinkers, Nos. E 3, E 4, Keller.
Drill, No. 1 24" Baker, cap. 2½".
Drill, rad. 2' Fosdick, t. a., b. d.
Drills, rad. 6' American, m. d.
Drill, rad. 6' Bickford m. d.
Drills, upright, 14" to 32".
Drill, sens. No. 1 Avey, b. b., b. d.
Drill, 4 sp. No. 2 Foote-Burt, m. d.
Drill, 16-spdl. No. 12 Pratt & W.
Gear hobber, No. 18 HN Gould & E.
Gear millers, No. 1 Bilton, b. d., (2).
Grinder, disc, dbl., 18" Diamond, b. d.
Grinder, disc, No. 14—26" Besly, bd.
Grinder, surf. vert, 36" P & W m. d.
Grinder, univ. No. 2½ Bath, b. d.
Hammer, 100 lb. Bradley, cush. hel.
Hammer, forg. 5000-lb. Niles-B-P.
Keyseater, No. 4 Mitts & M. b. d.
Keyseater, No. 2 No. 3 Baker, m. d.
Lathe, 14"x6' Carroll, q. c. g., b. d.
Lathe, 14"x8' Hendey Tie B. t. a. b. d.
Lathe, 16"x6' American, q. c. g., b. d.
Lathe, 16"x10' Am. grd. hd. q. c. g.
Lathe, 20"x16' Shum. B&E t. a., b d.
Lathe, 24"x10' Bradford, p. c. g., b. d.
Lathe, 26"x12' Bridgeford, q. c. g., b. d.
Lathe, 30"x14' L. & S. q. c. g., m. d.
Lathe, 30"x16' L&S grd. hd. q. c. g.
Lathes, tur. No. 4 W. & S., b. d.
Lathe, tur. 18" Libby, grd. hd. 3 9/16" h. s., m. d.
Lathe, tur. 24" Steinle, grd. hd. 6½" h. s., m. d.
Miller, plain, No. 2 Cincinnati b. d.
Miller, plain, No. 2½ LeBlond, b. d.
Miller, plain No. 28 Ohio, b. d.
Miller, plain No. 4 LeBlond.
Miller, plain B. & S. tbl. 17"x72".
Miller, univ. No. 1 Cincinnati b. d.
Miller, univ. No. 2-B Hendey, b. d..
Miller, 26"x26"x12' Ing., adj. r.
Millers, vert. Nos. 4-B & 6 Becker.
Pipe machines, (2) 2" Landis, b. d.
Planers, 36"x36"x10' Cin., 2 hds.
Planer, 42"x42"x10' Cincinnati, m. d.
Planer, 60"x48"x14' N.-B.-P. 3 hds. b'd
Planer, 72"x56"x20' Cin. 3 hds. m. d.
Press, No. 0 Stiles. 1" stroke.
Press. cam, 400 ton Perkins, str. 14".
Press, o. b. i. No. 20 Bliss. 2" str.
Press, wheel, 200 ton Harris, b. d.
Rolls, bending, 8"x10 ga. 5" dia. rolls.
Saw, hack, 9"x9" Racine, s. p. d.
Saw, hack, 12"x16" Peerless, m. d.
Shaper, 28" Queen City, b. g., b. d.
Shapers, (2) 24" Gould & E. V-ram, b. d. & m. d.
Shaper, 24" Cincinnati, b. g., b. d.
Shaper, 16" Amer. d. b. g., American.
Shear, rot. No. 5-A Quickwork.
Shear, sq. 10'x3/16" Niagara, m d.
Shear, sq. 13'x¼" Hyde Park, 18" gap.
Straighteners, Shuster 6' & 12'x¼".
Table, rotary, 20" graduated.
Tapping machine, 10" Baker, s. p. d.
Welders, arc, 200-300 amp. Lincoln.
Unishear, No. 0 36"x16 ga., m. d.

FOR SALE BY

Marr-Galbreath Machinery Co., 55 Water St., Pittsburgh, Pa.

Air comp., 9x8" & 10x8".
Boring mill, 42" Bullard, 1 swivel and 1 turret head, m. d., p. r. t.
Boring mill, 30" Bullard V T L, threading attachment.
Brake lining punch and riveting machine, m. d.
Crimping & corrugating machine, 10'x16 Ga., Keene.
Drill, 24" Aurora, t. a., m. d.
Drill, 28" Superior, b. g., power fd.
Drill, No. 11-B, Natco, 16-sp., m. d.
Drill, radial, 3' Dreses, tapping att.
Drill, radial, 3½' Canedy-Otto.
Forging mch., 1½" Acme m. d.
Furnace, gas, Tate-Jones, 25"x23"x12" on legs.
Grinder, No. 21 Landis 10"x30", plain, b. d.
Grinder, univ. No. 3 Cin. 16"x48", m. d.
Grinder disc, No. 2 Gardner, 20" wheels, m. d. 3/60/220.
Hammer, power, 50 lb. Boss, b. d.
Hammer, power, 50 lb. Little Giant.
Hammer, 200 lb. Beaudry, power.
Hammer, 400 lb. Bliss board drop, b. d.
Hammer, 800 lb. Erie SF steam or air.
Hammer, Syntron Elec., 1/60/110/.
Keyseater, No. 2 Catlin, cap. 2"x15".
Keyseater, No. 3 Mitts & M., belt.
Lathe, 8" Hjorth bench precision thread, att., turret, m. d.
Lathe, 13"x8' So. Bend, q. c. g., t. a., chuck.
Lathe, 16"x10' G-H., g. h., t. a., form m. d.
Lathe, 16"x12' L. & S., q. c. g., ta.
Lathe, 18"x8' Superior, q. c. g., d. b. g.
Lathe, 20"x8' Hendey, g. h., t. a., m. d.
Lathe, 20"x10' Johnson q. c. g., t. a.,
Lathe, 22"x12' Rahn-Larmon, q. c. g.
Lathe, 24"x16' L. & S., q. c. g., t. a., chuck.
Lathe, 27"x16' L. & S. selective hd., q. c. g., t. a., chuck.
Lathe, turret, No. 4 W. & S., bar feed, m. d., g. f. h. (2).
Miller, univ. No. 2 Cin., serial 2530-U.
Miller, pl., No. 15 Garvin, 42x10½x21".
Miller, No. 4 Ohio, table 101".
Pipe machine, 2" Robbins, bench, motor 1/60.
Pipe machine, 12" Cox., b. d.
Pipe machine, 18" Wieland, m. d.
Planer, 24"x24"x8' Gray, 1 head.
Planer, Gray, 56x48x10'. 4 heads.
Polishing stand, 3 H P. US., 3/60/220.
Press, arbor 30 ton Lourie, Hyd.
Press, bench, No. 100-A. W-F., Wt, 275 lbs.
Press, foot, 1-A Bliss-Con. 400 lbs.
Press, OBI No. 21 Bliss, 1"&2" st. (3)
Press 77½ Bliss, T. R., 10" str. dbg.
Press, No. 78½ Bliss T. R., 10" str.
Press, D. C., No. 95-E Toledo, tie-rod; d. b. g., for m. d.
Press, No. 57-S Toledo, d. b. g., fctn. clutch.
Press, No. 59½ Toledo tie-rod, d. b. g., fctn. clutch.
Press, P-3 Ferracute m. d.
Press, No. 65 B Niagara, d. c., plain, flywheel type.
Press, or gang punch, No. 6 Nia. 48".
Press or shear, United ob., 3½" shaft, m. d. (2)
Pump, cent. 700 GPM., 4" disc.
Punch, triple combination Pels 16., m. d.
Punch & shear, 25x24 U. Buffalo,
Punch and shear, No. 3 L. & A., ⅜"x⅜", 14" throat.
Punch and shear, No. 12 Badger combined, b. d.
Punch, & sh. hand, No. 3B. Beloit 5/16"x½".
Punches, hand No. 6 Kidder.
Riveters, Shuster, ½"&3/16", belted.
Riveter, No. 120 Grant, cap. ⅞", m. d.
Saw, band, 20" Clark "JM", gear box, AC motor.
Saw, No. 10 Racine 9x9", belted.
Saw, cold, No. 7 Espen-L., 15' belt.
Saw, cold, No. 1 Newton, 4½" belt.
Shaper, 14" Steptoe, sbg.
Shaper, 21" Smith & Mills.
Shaper, 24" Barker b. g. V-ram, b. d.
Shaper, 24" G. & E motor 220-volt, d. c.
Shaper, 24" American b. g. crk., b. d.
Shear, angle 8x8x1½" H & J. m. d.
Shear, angle, 6x6x⅜" Kling., m. d.
Shear, Rotary 232 Bliss 14 ga.
Shear, throatless 18-M Marshalltown, motor drive.
Shear, bar 3" United, 24" blade, m. d.
Shear, squaring, power 30"x18 ga.
Steam turbines, 100 h. p. 900 rev (2).
Testing mach. 100 Ton Olson, com.
Tiering machines 600 & 1000 lb. hand.
Truck, Cowan Transveyor 5000 lb. hand.
Tumbling barrel, tilting, 20x14", gear con. m. d.
Valve refacer, Kwik-Way, cabinet base, m. d.
Welder, Arc 300 amp. 3/60/220.
Wheel press, 150-ton Allen, 48"x9', b. d.
Wheel press, 60 ton 34"x8½', b. d.
Wheel press, 200 ton 93"x14' m. d.

Partial List. Get Our New Complete Stock List.

FOR SALE BY

Fuchs Machinery & Supply Co., 1102 Farnam, Omaha, Nebr.

Drill, 9" Sipp.
Drill, 34' Bickford radial.
Drill, 25" sliding head.
Drill, 42" Barnes sliding head.
Grinder, 6x72 Norton.
Grinder, 10x24 Landis piston.
Grinder, Gisholt internal.
Grinder, Norton tool and cutter.
Hammer, 100 lb. Little Giant.
Hacksaw, 6x6 Peerless.
Lathe, 8 Woods tilted turret.
Lathe, 14"x6' Rockford, q. c.
Lathe, 14"x10' Sidney q. c., t. a.
Lathe, 16"x8' Monarch q. c.
Lathe, 24"x12, Blaisdell.
Lathe, 24"x10' Monarch q. c.
Lathe, 28"x21' Pond.
Press, 125 ton hyd wheel.
Press, D. A. C. 54 Ferracute.
Miller, No. 2 B. & S. plain.
Miller, No. 4 Hendey s. p. d.
Rolls, 6', 7" diameter upper roll, 6" lower rolls.
Welders, 150, 200, 300 amp. Lincoln—USL, Westinghouse.

FOR SALE BY

The O'Brien Machinery Co., 113 N. Third St., Philadelphia, Pa.

Band saw, 42" American, V belt, m.d.
Boring mill, 24" Bullard, rap. prod., threading attachment.
Crane, 36' Gantry, 20 ton, hand oper.
Drill, 6' Mueller radial, mtr. dr.
Drill, D2 Colburn, 3" cap.
Gear hobbers, 18" & 24" Gould & E.
Grinder, No. 103 Rivett, internal hole cap. 1/64" to 2".
Grinder, No. 11 B & S Plain, 6"x32" s. p. drive.
Hammer, 1100 lb. NBP. steam forg.
Hammer, 2000 lb. Chambersburg double frame steam.
Lathe, 16"x6' Hendey, motor drive, 3 phase motor, taper attachment.
Lathe, 30x24 New Haven, belt.
Lathe, 36"x26' Johnson, belt drive.
Lathe, turret, No. 1 B&S hand screw machine, belt drive, lot of equip.
Lathe, turret, 3A Warner & Swasey S. P. drive, cap. 3½".
Miller, No. 1D B&S Univ., table 36"x11½" cone drive.
Miller, No. 3 LeBlond plain, belt drive, table 12"x60", quick chge.
Miller, No. 2 Kempsmith, plain, table 10"x45", belt drive.
Miller, No. 5 Cincinnati plain, table 76"x19", s. p. drive.
Miller, No. 3 Cinn. vertical, table 53"x13½", SP dr.
Pipe machines, 2, 4, 6, 8 and 12" belt and motor drive.
Press, No. 41 Robinson, 36" bet. up. geared stroke 2", weight 11,000 lbs.
Shapers, 14, 16, 20 & 24" various makes
Shear, 30" throat Quickwork rotary, 3/16" capacity.

FOR SALE BY

Ott Machinery Sales, Inc., 548 Second Ave., Detroit, Mich.

Automatics, Cleveland Model A ½, 1¼, 2¼, & 4¼; Fay 14"x19"; Acme Nos. 53, 54, 55, and 76; Gridley 4 spdl. ½", 1¼", 1¾" 2¼" & 2¾".
Boring mills, Bullard 52" 2 swivel heads and 24" rapid production, Lucas No. 21 horizontal, s. p. d.
Drills, h. s., b. b. Henry & Wright No. 2, 3, 4 and 6 spindle.
Drills, Plain Radial, 4 Mueller and 5' Western.
Gear shapers, Fellows Nos. 6.
Gear generators, Gleason 15" spiral bevel; roughers and finishers; Barber-Colman No. 3 and 12; Lees Bradner No. 1 & 5A.
Grinders, Brown & S No. 10, s. p. d. B. & S. Nos. 14 & 16 pl., m. d., No. 3 B&S univ. Heald No. 50, 55, 65, 70, & 75; Landis 10x36 plain s. c., m. d.; Norton 6x32, 10x36 & 14x50; type A, 18"x55" m. d.
Lathes, American G. H. 16"x6'; LeBlond 16x6; Flather, 24"x10'. Hendey 16"x6' T. A. Yoke Head. 36"x10' Niles-Bement-P. m. d.
Lathes, turret, W. & S. No. 2A and 4 geared head; W. & S. Nos. 4 and 6 cone; J. & L. 2"x24" and 3"x36" dble. spdle.
Milling mchs., B. & S. No. 2B hvy. plain; Kempsmith Nos. 12 & 33 Mfg. Oesterlein univ. 24x7½x18", Rockford univ. No. 2B, m. d.
Planers, 48"x36"x8' Cinti. 2 hds., m.d.
Presses, Ferracute Pl. 2, 3, D G 53 and D D G4 cam; Bliss No. 29 arch; Metalwood 30 ton hyd.

Many more good tools.: Your inquiries solicited.

USED AND REBUILT MACHINERY

FOR SALE BY

Scott-Bansbach Machinery Co., 4607 West 20th St., Chicago, Ill.

Automatic screw machine, cone, ⅜", 4 spindle, belt drive	$1,250.
Automatic screw machines, B. & S., Nos. 00, 0, 2	$450 to 1250.
Automatic screw machine, B.&S. No. 2 Turret Former, cap. ⅜"x3" b.d.	500.
Automatic screw machine, B. & S. No. 19 high speed, cap. ⅜"x1½", b. d.	400.
Automatic screw machine, B. & S. No. 19 high speed, with motor	500.
Automatic screw machine, Davenport, ½", 5 spindle, b. d.	750.
Automatic screw machine, Gridley, 4 spdl., 1¼" Model G, and F	600.
Automatic screw mche., Cleveland, Model A&B, ⅝" to 3¼" b.d., $300 to $1000.	
Automatic screw machine, 7⅛" Cleveland, model A, belt drive, 13964.	2850.
Miller, No. 0, Bristol, hand, 14"x49"x14"	135.
Miller, No. 25 Becker, plain, 25"x17"x8", power feed	275.
Miller, No. 1A Milwaukee, geared head, capacity 22"x8"x19"	800.
Miller, No. 1½B Milwaukee, geared head, capacity 28"x10"x19"	1100.
Miller, No. 28 Ohio, plain, belt drive, 28x10x13, vise	600.
Miller, No. 5, B. & S. plain, cone drive, capacity 48x12x18	750.
Miller, No. 2 univ., K. & T., cone head, 26"x8"x16"	750.
Miller, No. 1½ Knight, vertical, 16½"x8"x15½" belt drive	300.
Miller, Putnam, semi automatic, production, 19" auto. feed	200.
Miller, No. 33 Kempsmith geared head Production type, 36"x10"x11"	1000.
Motor, 20 h. p. G. E., 220 v., 60 cy., 3 ph., 1145 r. p. m., complete	200.
Planer, 17"x18"x3' 6", no name, 1 head	150.
Planer, 17"x17"x4' Hendey tool room, 1 head, belt drive	225.
Planer, 24x24x6 Ohio heavy duty, 1 head	350.
Planer, 48"x48"x8', Powell, heavy duty, 1 head	500.
Planer, 72x72x12 Gray, 4 heads	1,500.
Press No. 15 Robinson, horn type with table and motor, AC 220 volt	325.
Press, No. 15 Wold, O.B.I., 2" stroke, 28 ton capacity 2000 pounds	300.
Press, No. 51, Bliss, Arch, ½" stroke, 25 ton, 1800 lbs	125.
Press, No. 51 Toledo arch, 2½" stroke, 56 ton, 5300 lbs	350.
Press, Hercules, 15 ton, power forging or broaching, m. d.	400.
Punch, shear and bender, No. 23 Armstrong-Blum	100.
Punch, Kneeland, 10" throat, shears 5"x1" flats	100.
Riveter, No. 1½B. High Speed Hammer, capacity ⅜", motor shelf	100.
Riveter, No. 3A, High Speed Hammer, cap. ¼", motor shelf	150.
Riveter, No. 4A, High Speed Hammer, ⅜" capacity, no ctrsft	200.
Riveter No. 5 A, High Speed Hammer, cap. ⅜", motor shelf	275.
Riveter, Grant No. 82, 101A, 80 and 120, capacity ⅛" to ⅜", belt dr. 50 to 125.	
Roll feed, double, 5½" stock, 2" stroke, from No. 21 Bliss press	75.
Saw, No. 2 Klem, band, for metal cutting, belt drive	300.
Scleroscope, Shore complete with stand and blocks, model C	125.
Screw machine, Acme, plain head, ⅝"x4" belt drive	125.
Screw machine, B. & S., No. 1 plain head, ⅝"x3", belt drive	225.
Screw machine, P & W., 1"x15", cone drive, plain head	200.
Screw machine, Foster, No. 5 geared head, 1¼"x8", power feed, s.p.d.	500.
Screw machine, S & K, No. 4, friction head, 1½"x8" belt drive	250.
Screw machine, Garvin, No. 3, friction head, 1⅛"x7", belt drive	150.
Shear, U-52, Pexto, power square, 16 gauge, belt drive	325.
Shear, 44", Chicago Steel, square, 14 gauge, 18" gap, with motor	400.
Shear, 10" Niagara circle, No. 20 gauge, cuts 56" dia. circle	40.
Shear, Niagara, No. 05 circle, No. 18 gauge, cuts 48" circle	75.
Separator, McKinzie, for chips, blower type, belt or motor	250.
Separator, 11 quart capacity, belt driven	50.
Separator, American, capacity 1½ bushels, belt driven	250.
Shaper, 16" Queen City, plain geared crank with vise and countershaft	325.
Shaper, 16" Steptoe, back geared, crank with vise and countershaft	400.
Shaper, 16" Cincinnati back geared crank, with vise & countershaft	425.
Shaper, 20" American, back geared, crank, vise and countershaft	450.
Tapper R. & S., ⅜" capacity, horizontal, on pedestal	75.
Tapper, Garvin, No. 2 automatic, capacity ⅜" and ½" belt drive	150.
Threader, 1" H & G, Eastern Mach. Screw Corp., belt drive	125.
Turret lathe, 24"x24", J & L, geared head, tools for bar work	250.
Turret lathe, 3½"x36", J & L, geared head, with chuck for chuck work.	350.

FOR SALE BY

Chas. E. Wain Machinery Sales, 7800 Mack Ave., Detroit, Mich.

Floor sander, electric.....$ 65.
Lathe, wood, 16" complete..... 35.
Lathe, Fox brass..... 75.
Tapper, ½" Garvin No. 2..... 40.

Pumps, water or oil, for every service.
2 to 3 tons of good leather belting to dealers only.

FOR SALE BY

Central Machine Tool Corp., • 19 Lucas St., • Toledo, O.

Lathe, 20"x10' Sidney G. H., M. D.
Lathe, 20"x8' American G. H.
Lathe, 12 'x5' gap type Q. C. G, Seneca Falls.
Milling machine, 2B Mil. motor in base.
Planer, 36"x36"x8' American.
Planer, 24"x24"x6' Cincinnati.

FOR SALE BY

Globe Machinery Company • 602 W. Lake St., • Chicago, Ill.

Press, No. 5 obi, auto. fd., 8" roll fd.
Arc welders, 175 amp., d. c.
Arc welder, Lincoln 150 amp. a.c. port
Drill, 4 sp. b.b., No. 2 Morse taper.
Drills, 20" h. d. Baker Camel Back.

Lathe, 28x12 h. d. Bridgeford, m. d.
Lathe, 18x7 h. d, Oliver, qcg, comp.
Mill, No. 3 Cincinnati plain.
Mill, No. 2 LeBlond plain.
Screw mch.. hd., 1¾" Millholland.

FOR SALE BY

W. E. Brandt Mach'y. Sales, 513 Empire Bldg., Pittsburgh, Pa.

Bolt cutter, 2" Landis head.
Brake, 10'x3/16" D &K., all steel.
Grinder, 20"x96" Farrell roll.
Keyseater, No. 2 Baker, 2" keyway.
Planer 36"x36"x10, Liberty 2 heads.

Radial drill, 5' Prentice.
Shaper, 26" s. p. d.
Shear, 10'x14 ga. Niagara No. 2120.
Shear, Quickwork. 60" throat 14 ga.
Turret, 24" Gisholt, t. a.

FOR SALE BY

H. F. Wolnick Machinery Co., • • 9 So. Clinton St., Chicago, Ill.

Air compressor, 25 cu.ft., d. c. motor.
Cam grinder. P. & W.
Generator, 11" & 18" Gleason.
Lathe, 18"x8' Hendey, taper att.
Mill, No. 3 LeBlond plain.

Press, No. 4 o. b. incl., 4" stroke.
Press, No. 3 o. b. i., 3½" stroke.
Punch press, No. 0 bench.
Swaging machine, ½" capacity.
Welder, 10 K.W. automatic spot.

FOR SALE BY

The Nutmeg State Machinery Corp.

1041-1051 State Street • • • • New Haven, Conn.

Drill, Morris 3' radial.
Grinder, Brown & Sharpe No. 2 universal.
Grinder, Abrasive No. 33 motor drive.
Miller, Brown & Sharpe OY plain, motor drive.
Miller, Van Norman No. 2 duplex, motor drive.
Miller, Becker No. 2A vertical arranged motor drive.
Press, Bliss No. 3½B toggle.
Press, Toledo No. 54A special s. s., m. d.
Press, Waterbury Farrel No. 7 dial feed, 21" dial, arr. m. d.

FOR SALE BY

Belyea Company, Inc., - 150 W. 18th St., New York, N. Y.

D. C. MOTORS
Adj. Speed—230 Volt

H. P.	MAKE	TYPE	SPEED
2— 500	G. E.	MPC	180/350
1— 400	West	Mill	450/600
1— 400	G. E.	MPC	160/300
2— 300	West	SK	150/300
2— 200	G. E.	DMC	300/600
1— 125	G. E.	DMC	150/300
1— 125	West.	SK 210	225/900
8— 120	G. E.	DMC	300/750
2— 60	Diehl	K11-40	550/1100
1— 100	West	SK	475/1000
3— 75	Cr Wh.	100 H	350/900
2— 60	El. Dy.	25S	450/1200
5— 60	El. Dy.	25S	525/1050
2— 50	West	SK-190	225/600
12—40/50	Cr. Wh.	4	175/700
1— 40	West.		300/900
2— 35	West.	SK	500/1500
12— 20	G. E.	LC	650/1950
2— 7½	G.E.	RF-10A	450/1800
12— 7½	West.	SK-80L	400/1600
12— 7½	West.	SK-70L	500/1500
14— 5	West.	SK-70L	400/1600
10— 3½	West	SK-40	450/1800

MOTOR GEN. SETS, 3 ph. 60 cy.

2—1250/1500 kw West. 3-un. 250/125v consist of 2-625/750 kw D C 125v coupled ea. end of 1-1930 KVA sy 2200v 600 RPM.

1—1000 kw GE MPC DC 250v conn. to 1400 HP sy. 6600/2300v 514 RPM.

1—1000 kw GE MPC DC 600v conn. to 1400 HP sy. ATI 4000v 514 RPM.

1—500 kw GE MPC DC 250v conn. to 700 HP sy ATI 2300v 720 RPM.

3—300 KW GE MPC DC 600v conn. to sy. ATI 2300v 720 RPM.

2—250 KW GE DC 250v conn. to sy. ATI 2300v 720 RPM.

1—200 KW Ridg'y DC 275v conn. to 300 HP sy 440/220v 900 RPM.

1—200 KW GE DC 250v conn. to sy. ATI 2300v 720 RPM.

3—200 KW GE MPC DC 250v conn. to sy. ATI 6600/2300v 1200 RPM.

1—100 KW West DC 250v conn. to sy. 2200v 1200 RPM.

A. C. MOTORS—60 CYCLE
Synch. Type

H.P.	TYPE	VOLTS	SPEED
1500	G.E., ATI	440/220	180
1400	G.E., ATI	4000/2300	514
1000	West	2200	900
450	West.	440/220	257
350	Cr. Wh.,	2300/440	720
225	E.Mchy.3Brg	2300/4150	450

SLIP RING TYPE

1500	West.CW	2200	440
850	West.CW	2200	710
500	Al. Ch.	2300/4000	500
450	West.CW	2200	875/700
400	G.E.MT424	4150/2300	390
300	Al. Ch ANY	2200	585
300	West CW	440/220	1800
250	G. E.MT.424Y	4000/2300	257
250	F. Morse BV	2200	1200
250	West.CW	440/220	585
225	G. E.	440/220	1800
200	West CW	440/220	875
200	West CW	2200/550	870

SQUIRREL CAGE TYPE

1—250	West. CS	2300/440	580
1—200	G. E., IK	550	600
1—200	West.CS876A	440/220	1160
1—100	G.E.IK15	440/220	720

FOR SALE BY

International Machinery Co., 3178 Bellevue Ave., Detroit, Mich.

DRILLS

21", 24" & 36" Cincinnati t. a.
263 Camel Back Barnes.
1, 2, 3, & 4 spindle Leland & Gifford.
Avey and Edlund, hand and power feed.
3' American radial, gear box.

GRINDERS

No. 70 Heald internal, self-contained.
Nos. 1, 2 & 3 Brown & S. universal belt & m. d.
No. 22 & 25 Heald Rotary.
No. 11 Brown & Sharpe plain, s.p.d.
Cincinnati face mill, m. d.

LATHES

16x8 Monarch geared head, motor in base.

MILLS

No. 3 Van Norman s. p. d.
18" & 24" Cinc. dup. widened pattern.
6"x24" & 6"x60" H. & W. thread.
16" and 24" G. & E., m. d.

TURRET LATHES

No. 4 Warner & Swasey universal geared head, m. d.
No. 6 Warner & Swasey univ. m. d.
No. 4 Brown & Shorpe, hand.

AUTOMATICS

9/16 Model G Gridley motor drive.

USED AND REBUILT MACHINERY

FOR SALE BY

Service Co., - - - 3732 Cedar Ave., Cleveland, Ohio

WELDERS

General Electric 200-amp. A.C. (1).
U. S. L. 200-amp. A.C. (1).
Lincoln 200 ampere with 6 cylinder engine (3).
Lincoln 300-amp., gas engine dr.(2).
Lincoln 400-amp., gas engine dr.(2).
Transformer type A. C. welders, 220-440 volt (7).
F.K.W. Lincoln 300 amp. a.c. dr.(4)
We rebuild, buy and sell welders.

FOR SALE BY

J. Bieser Mfg. & Machy. Co., 16th & Madison St., Springfield, Ill.

Air com. unit, 2 h. p. automatic. $ 75.
Lathe, 16"x9' q.c., Stand. equip. 325.
Miller, No. 2 Cincinnati..... 450.
Mil., LeBlond, div. hd. arr. m. d. 295.
Miller, No. 3 Burke, type p. f... 125.
Miller, No. 6 Transit. hvy. duty $400.
Motor, 10 h. p. 3 60-220..... 60.
Slotter, 13" str., 30" rot. table... 175.
Trip hammer, 200 lb. Champion 195.
Valve refacer, B. & D., m. d.... 20.

FOR SALE BY

Crown Silver Co., Inc. - 62 Harvard St., - Brookline, Mass.

Annealing oven, gas, American No. 19. Practically new.
Hammer, trip, 25 lb. Bradley. A-1 condition.
Lathe, metal spinning, Grabo 20", with 2½ h. p. G. E. motor and stand for motor, or will trade for punch press about size of Bliss No. 20 or Standard No. 9.

FOR SALE BY

Standard Machinery Co., 347 Indiana Ave., Grand Rapids, Mich.

2—WATERBURY FARREL HEAVY GEARED PILLAR PRESSES

Pillar type straight side single crank; double back geared; 7" shaft; 30" between uprights; bed 28"x28"; 2" stroke; distance bolster to ram, stroke down adjustment up, 9"; bolster 4" thick; flywheel 44"x7"; floor space 42" length, 72" width, 114" height; weight about 20,000 lbs.

FOR SALE BY

International Machinery Co., 3178 Bellevue Ave., Detroit, Mich.

95E Toledo Double Crank Press, tie rod construction, double geared, diameter of crankshaft 7½" & 8", stroke 14". Die space with stroke down and adjustment up, from bed to ram 37". Area of bolster F to B and R to L 60"x84". 2 bolster plates 5" thick. 6 spring cushions. Motor for adjusting ram. Fine mechanical condition. Can be inspected in operation in State of Indiana. Price on application.

FOR SALE BY

M. A. Wertman Machinery Co., 623 Penton Bldg., Cleveland, Ohio

Automatic, 2-2½" B Cleveland, m. d.
Drill, Barnes 20" camelback.
Drill, Rockford 26" sliding head.
Drill, radial, 3½' Mueller.
Drill, radial, 2' American.
Gear cutter, No. 4-36" B. & S.
Grinders, B. & S. No. 2 surf. rebuilt.
Grinder, Norton 6x32" (2).
Grinders, Norton 10"x50".
Lathe, precision bench, P. & W.
Miller, B&S No. 2 plain cone type.
Miller, Superior hand, A 1 cond.
Nibbler, Campbell No. 2, 24" thrt. md.
Swager, No. 3 & No. 4 Langelier.

USED AND REBUILT MACHINERY

FOR SALE BY

Joseph H., man & Sons, - Tioga & Almond Sts., Philadelphia, Pa.

POWER PRESS SPECIALISTS

407A Bliss toggle, tie rod.
600 ton No. 25K Bliss embossing KJ
500 ton American Can embossing KJ
168 Toledo, toggle.
No. 79½ Bliss, 16" stroke tie rod.
10'x4" shear gap 15" Wais & Roos.
Shuster straight ⅜"x14' & ⅜"x15'.
Hundreds of presses of various types.

FOR SALE BY

Long Machinery Corp. - 56 Pearl St., - Boston, Mass.

Drill, 20" Fairbanks ..... $ 75.
Grinder, cutter and tool, Walker No. 2, c/s and equipment ..... 350.
Lathe, bench, Rivett No. 4, comp. sl. rest ..... 125.
Lathe, engine, 12"x5' Star, c. r. ..... 125.
Miller and centers, Becker No. 25 plain ..... 200.
Miller, bench, Burke, power feed ..... 50.
Miller, plain, LeBlond No. 3, s. c. ..... 660.
Planer, 22"x5' Gray ..... 250.
Planer, 27"x7' Gray, c/s ..... 450.
Planer, 16"x42" Walter, chuck and countershaft ..... 175.
Press, flywheel, Standard No. 7-S, 1½" stroke ..... 125.
Shaper, Guengat plain crank, 16" ..... 100.

FOR SALE BY

Failor-Strafer Machinery Co., - 136 Liberty St., New York

Conveyor and chain, 360', 4" links.
Drill, Amer. 3' sens. radial t. a.
Drills, Avey Nos. ¼, 1, 1½, bench.
Drill, No. 121, Baker, h. p. cap. 1½".
Drill, Cinn., 32" s. p. gear box.
Drill, Cinn-Bickford 4' radial.
Drill, 24" Hoeffer gang, 2 spdle.
Drill, 9" Sipp. h. s., b. b. cap. ⅝".
Grinder, No. 14 P.&W. surface b.b.
Lathe, 2½"x24" Acme tur. chucking.
Lathe, 3"x36" J. & L. bar & chuck'g.
Lathe, (2) LeBlond h. d. eng. 17"x6'.
Lathe, Sloan & Chase bench type.
Layout plate, 27"x40"x4" high.
Magnetic seperator, Dings.
Miller, Becker, duplex Lincoln type.
Miller, B. & S. No. 5 vert., rotary.
Miller, B. & S. No. 24 plain.
Miller, Cinn. No. 3 plain, s.p.d.
Miller, Garvin plain No. 14.
Saw, Higley cut-off.
Sq. shear, 30" Bliss, cap. 5/16".

FOR SALE BY

Reliance Machinery Sales Company

1405 Brighton Place, N. S. - - - - Pittsburgh, Pa.

Brake, 10'x10 ga. Obl, press type.
Brake, press, 72" Rob. toggle m. d.
Bulldozer, No. 9 W.-W., 70,000 lbs.
Drill, 4 spindle Colburn, Mfg. type, cap. 2" like new.
Drill, 25" Prentiss, tapping att.
Hoists, chain, 1½ and 2 ton Y & T.
Lathe, 30"x10' Bradford taper.
Lathe, 20"x12' 6" Am., cone, taper.
Lathes, spinning, 30" Bliss & Tol., roller bearing.
Miller, No. 4 Cin., plain, cone.
Nibbler, No. 1 Gray 34" tht., 3/16" capacity, m. d.
Press, Robinson dbl. cr., 80" wide, 4" shaft, grd. 3" stroke.
Presses, No. 38 Toledo s. s., 7" stroke, grd.
Presses, Nos. 6 and 7A Niagara inclinable, grd., 5½" & 6" strokes.
Riveter, Townsend, cap. 5/16", 21" tht.
Shear, double angle, 6x6x3/4" Clev., mounted on turnable, m. d.
Shear, Niagara 10'x14 ga. squaring.
Shear, 8'x18 ga. Niag. sq., foot pwr.
Welders, 300 and 400 amp. Lincoln, motor end 3-60-220-v.

FOR SALE BY

J. Lee Hackett Co., - 5838 Commonwealth Ave., Detroit, Mich.

1—Cincinnati 24" planer, motor driven, with 7½ HP 600 RPM G. E. AC motor mounted on top frame, with magnetic push button control, single head on cross rail, 6' box type table. Extra good condition.

FOR SALE BY

Olson Manufacturing Co., - - - Boise, Idaho.

ELECTRIC HOISTS

Five ton 2-motor electric hoists, P & H make in A-1 cond. (2)....each $1500.
Detroit Electric hoists, 3-ton, type M, in A-1 condition (3).....each 450.

FOR SALE BY

Lake Machinery Co., - - - 654 Lake St., Chicago, Ill.

Automatic screw machines, No. 2 Brown & Sharpe (5).
Automatic screw machines, No. 00 Brown & Sharpe (9).
Lathe, 32"x16' Bridgeford, geared head.
Lathe, 24"x16' Lodge & Shipley, q. c. g.
Lathe, turret, No. 3-B Foster, geared head.

FOR SALE BY

United Machinery & Supply Co., 1241 Walton Ave., St. Louis, Mo.

Baler, for scrap.
Brake, Streine toggle 12'x10 ga.
Grinder, No. 13 B & S universal.
Grinders, U. S., a. c., m. d. 18" & 24".
Hammer, 50 lb. Baudry.
Hammers, board drop 400 & 600 lb.
Miller, No. 6 Becker.
Seamer, 48" Niagara.
Shear, circle and flanging, 10 ga.
Threader, Oster 2" m. d., a. c. dies.

FOR SALE BY

Brownell Machinery Co., 150 Pine Street, Providence, R. I.

Drill, radial, 3' American, a. p. d.
Drill, 12-spindle Pratt & Whitney.
Gear cutter, Whiton 34"x7".
Lathe, Pond 42"x20'.
Lathe, Perkins, 28"x18'.
Lathe, Monarch, 18"x14'.
Miller, Kempsmith, No. 33, 50".
Planer, Whitcomb-B. 24"x24"x6'.
Planer, Pond 48"x48"x10'.
Screw machine, B. & S. No. 2 auto.

FOR SALE BY

E. L. Klauber Machinery Co., 320-322 South Third St., St. Louis

Drills, No. 00 bench precision.
Grinder, No. 2¾C Bath, universal.
Lathes, Nos. 0, 1 & 3 Precision.
Lathe, 15"x6' South Bend m. d.
Lathe, 16"x8' Bradford.
Miller, No. 00 profile bench.
Millers, No. 1 Knight vertical.
Miller, 16"x55" Newton horizontal.
Press, Bliss S. S. 56 ton.
Saws, 6x6 Racine H. S.

FOR SALE BY

General Blower Co., - - - 401 N. Peoria St., Chicago, Ill.

BLOWERS—FANS—EXHAUSTERS.

For Dust Collecting — Ventilating.
Oil and gas burners, cupolas, furnaces, etc.
Roots—Connersville and centrifugal blowers.

What are your blower requirements?

AUTOMATIC SCREW MACHINES

No. 00G—Brown & Sharpe.
No. 0G—Brown & Sharpe.
No. 0—Brown & Sharpe—Rod Magazines.
No. 5A—Potter & Johnston.

DRILLS—HI-SPEED BALL BEARINGS

1—2—4—6 Spindles—Avey, Allen, etc.

GRINDERS

No. 22 Heald.
No. 33 Abrasive.
No. 14 Pratt & Whitney.
No. 10 Brown & Sharpe, Plain.
No. 11 Brown & Sharpe, Plain.
No. 1 Brown & Sharpe, Universal.
No. 2 and No. 4 Gardner Disc Grinders.

MILLERS

No. 1 Kearney and Trecker Vertical, rotary table.
No. 1 Brown & Sharpe Plain, taper nose.
No. 0 Brown & Sharpe.
No. 0Y Brown & Sharpe.
No. 1B Hendey Universal.
18" Cincinnati Automatic Millers.
No. 2 and No. 3 Garvin Duplex.
No. 6 Whitney Hand Millers.

HAND SCREW MACHINES

No. 0 and No. 2 Brown & Sharpe.
No. 6 Warner & Swasey.

PRESSES

No. 19 Bliss.
No. 21 Bliss.
No. 16B Bliss Horning.
No. 5 Loshbough & Jordan, O. B. I.
No. 4 Baird.

LATHES

12"x5' Reed-Prentice, Geared Head, M. D.
16"x8' Lodge & Shipley, Geared Head, M. D.
16"x8' Hendey

A FINE SELECTION OF ARBOR PRESSES.

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Brake, Pwr., bend., No.226 Chgo. Steel, 12' long, ¼" cap., pwr. clamp, m.d.
Gang Slitter, 36" Yoder, m. d., with levelling rolls.
Grinder, No. 25 Heald Surface, 16" mag chuck, hyd. feed.
Ironworker, Universal, Schatz, 6x6 angles.
Lathes, 30"x16' Lodge & Shipley, taper att.; 26"x16' Bradford, tap. att.; 25"x16' Ryerson, grd. hd., m. d.
Lathe, Tool room, 14"x7' Hendey, serial No. over 24,000.
Lathe, 36"x30' Lodge & Shipley, 24' centers.
Leveller, 48", 17 rolls, motor drive.
Miller, Univ., No. 3 Cincinnati, complete with div. hd., vert. bd., slott. att., rotary table and vise.
Millers, Univ., No. 2A B. & S., div. hd., motor drive.
Press, No. 59 Toledo, s. a., 18" stroke, tie rod.
Press, Hyd., Watson Stillman, 200 ton, 2-10" rams, 38x62 bet. posts.
Press, dbl. crk. tog. No. 408-B, Bliss 84" bet. upr. 56x84 bed, tie rod.
Press, dbl. crank, Niagara, No. 615, 62" bet. upr., shaft 8" diam., tie rod.
Press, dbl. crank, No. 6A Bliss, tie rod, 48" bet. uprights, motor drive.
Presses, open back, No. 9 Kohler, 100 ton, b. g., 7" stroke.
Press, OBI, No. 5 Loshbough Jordan, b. g., 4" stroke.
Press, OBI, No. 5 Toledo, b. g.
Press Brake, 10' 10 ga. OHL, excellent condition.
Rolls, 10' 3/16" Hilles & Jones, Initial type drop end.
Saw, Friction, No. 2 Ryerson.
Screw Machine, auto., No. 506 New Britain 6 spdl., m.d., practically new.
Shears, power, 13' 5/8" Bertsch, with hold-down, m. d.
Shear, power, 10' 3/8" United Eng.
Shears, pwr., 25 brand new Pexto shears in stock for immediate delivery, 3' to 10'.
Shaper, 24" Ohio Dreadnaught, tilt top tbl., force feed lub., motor driven.
Turret Lathes, Warner & Swasey Univ. Nos. 1A, 2A and 4A m. d.
Turret Lathes, Univ. No. 6 Warner & S. grd. hd., m.d. ser. over 220,000.

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Angle Roll, No. 16 Kane & R., m.d.
Arc welders, 150 to 600 amp.
Bolt Threaders, 1½" Acme, 2½" Acme.
Boring Mach., Car Wheel 42".
Boring mills, Bullard 36" rapid production; side head.
Brakes, power, Chgo. St. 10' 3/16", 10' 10 ga.; 8' 10 ga.; Box & Pan 8' 10 ga.
Brake, power, 8¼" Chicago Steel.
Dieing out press, H. & W. 25 ton.
Drill, rad., 5' Fos., hvy. duty, s.p.
Drills, Multiple, Nos. 11 & 12 Natco.
Eyelet machines Penn. motor drive.
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Grinder, disc, Gardner 30", b. b.; 53" horizontal; cyl. Landis 12x42";
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Ironworkers, Shatz 6x6 angles.
Ironworker, No. 11 Smith, capacity 3x3x⅜.
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Miller, Univ., No. 1½A, B. & S.
Millers, prod. Lincoln type Hendey
Millers, vert. No. 3 Knight; No. 1 B. & S., No. 3 4B & 5B Becker.
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Press brakes, 10' 18 ga.
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Rolls, 14' Bertsch, pwr. elevation. drop end, m. d.; 8" diam. rolls.
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Shears, 10' 14 ga.; 13' ⅜", 20" gap; 10' ⅜" m.d.; 8' 10 ga.; 10' 10 ga. 8' ⅜". 42" 10 ga. 10' ¼—13⅜".
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Gun welder, 50 KVA Federal

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No. 1, 2 Cleveland Plain, s. p. d.
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No. 3 Kempsmith Plain, cone.
No. 2B Milwaukee Plain, dbl. overarm.
No. 4 Kempsmith Pl. Maxi-Miller, m.d.
No. 13B Brown & Sharpe Pl., National Standard spindle, s. p. d.
No. 25 Becker Plain, cone.
No. 2 Rockford Universal, s. p. d.
No. 2 Brown & Sharpe Universal, cone.
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24" Cincinnati Duplex Automatic, belt.
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No. 1½ Bliss Cam.
D2, DD2 Ferracute Double Action Drawing.
P2, P3, P4 Ferracute, Double Action Drawing, m. d.
No. 5 Bliss Stiles Type, m. d.
No. 6 Waterbury-Farrel Double Crank.
No. 6, 7 Minster O. B. I.
No. 30, 32P, 35 Toledo Stiles Type.
S51 Ferracute Double Crank, m. d.
No. 54A Toledo Special, m. d.
No. 92B Toledo Double Crank Geared.
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No. 168¾ Toledo Toggle Drawing, 26" stroke, 56½ x 50" bolster, weight 120,000 lbs.
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No. 2 Badger State Alligator Shear, b.d.
Cleveland model EF Double End Punch and Shear, m. d., 48" throat.
Cleveland model EF Double End Punch and Shear belt, 36" throat.
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10"x5' Seneca Falls, m. d.
14"x8' Reed-Prentice Geared Head.
16"x6' Hendey Yoke Head.
16"x6' Hendey Geared Head, m. d.
16"x8' Hendey Geared Head, m. d.
16"x8' American, cone.
16"x12' Prentice Geared Head, m. d.
17"x8' LeBlond, cone.
17"x8' Sidney, cone.
18"x8' Greaves-Klusman, cone.

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18"x8' Hendey Yoke Head.
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20"x6' Headey Geared Head.
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20"x12' Lodge & Shipley Patent Head.
22"x10' L. & S., Selective Head, cone.
24"x8' Hendey Yoke Head cone.
24"x10' American, cone.
24"x10' Boye & Emmes, cone.
24"x10' Greaves-Klusman, cone.
24"x12' Schumacher-Boye, cone.
25" raised to 32"x12' LeBlond, cone.
30"x14' Lodge & Shipley, cone.
30"x14' Lodge & Shipley Patent Head.
36"x11' American, cone.
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36"x29' I. H. Johnston, cone.
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No. 5 Center Drive Niles Car Wheel Lathe, m. d., thru gear box, brand new machine.
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24" Coulter Open Side Crank, a. p. d.
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24"x24"x6' Ohio, 1 head, belt.
24"x24"x6' Smith & Silk, 1 head, m. d.
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30"x30"x8' Gray, 1 head, belt.
30"x30"x8' Pond, 1 head, belt.
30"x30"x10' American, 1 head, belt.
30"x30"x10' Gray, 1 head, belt.
36" x 36" x 10' Niles - Bement - Pond, Heavy Pattern 2 heads, m. d.
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36"x36"x12' Niles, 4 heads, m. d.
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48"x48"x14' Niles-Bement-Pond, 3 hds. Standard Pattern reversing motor dr.
48"x48"x15' Niles-Bement-Pond, 4 hds. reversing motor drive.

BORING MILLS

24" Bullard New Era, m. d.
24" Bullard Rapid Production, m. d.
30" Bullard 1 head belt.
30" Gisholt 1 head m, d.
36" Bullard, 2 heads, belt.
36" Colburn Vertical, m, d., 2 heads.
37" Niles Vertical, m. d., 2 heads.
42" Bullard, 2 heads, belt.
62" Niles Heavy Pattern, m. d., brand new, p. r. t., 2 heads.
72" Niles Standard Pattern, m. d., brand new, p. r. t., 2 heads.
72" Niles, 2 heads cone, old type.

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High Grade Machine Tools

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42"x20' American Geared Head.
42"x18' Bridgeford Grd. Hd. S.P.D.
36"x20' L. & S. Grd. Head.
27"x16' L. & S. Grd. Head.
18"x14' Monarch Geared Head.
26"x14' Bridgeford Grd. Hd. S.P.D.
21"x10' LeBlond Grd. Head.
14"x6' Lodge & Shipley Grd. Hd.

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16"x52" Landis self contained.
16"x48" Landis Crankshaft.
16"x48" & 72" Landis Crankshaft.
Type A Production Abrasive Finishing Nos. 50, 55, 60, 65 and 70 Heads.
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10"x52" Landis Plain, Self Con.
No. 78 Wilmarth & Morman.

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No. 3, 26" Brown & S. Gear Cutter.
Nos. 1, 2, 4 Adams Farwell Gear Hb.
18-H Gould & Eberhardt Hobber.
No. 6 Fellows Gear Shaper.
No. 3—36" B&S Gear Cutter.
No. 5—60" Newark Gear Cutting Machine.

Bolt and Pipe Threaders

½" Landis Double Spindle Lanco Hds.
2" Landis Double-Spindle.

Boring Mills

42" Colburn Vertical Mill Rap. Trav.
36"-44" Niles-Bement-Pond Side hd. Mill, Rapid Traverse.
42" Niles Boring Mills, 2 heads.
14' Betts, Cone Drive.
60" Niles Boring Mill, 2 heads.

Shapers

20" Ohio, motor driven.
16", 20", 24" Gould & Eberhardt motor drive, thru gear box.
16", 20" and 24" G. & E., cone drive.

Milling Machines

24" Cincinnati Automatic.
No. 3 Cincinnati Universal.
No. 4 Cinti. High Pwr. Univ. S.P.D.
No. 2 & 3 Kempsmith Plain, M. D.
No. 3 LeBlond H. D. Plain.
No. 3 Kempsmith Universal.
5B Becker Vertical Mill.
5" Pratt & Whitney Automatic.
18" Cincinnati Plain Mfg. Miller.
Briggs Manufacturing Miller.
No. 7-H Becker Lincoln type.
No. 1 Knight Miller and Driller.

Planers

30"x30"x8' American two heads.
30"x30"x16' Gray, two heads.
24"x6' Ohio.
24"x24"x14' Gray, box table.
42"x42"x10' Cleveland Openside, 3 heads, A. C., M. D.

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24" Cincinnati Bickford Upright, tap.
2½, 3, 3½, 6' Cinci.-Bick. S. P. D.
3, 3½, 4 American Trip. Pur. S.P.D.
3' Bickford Plain, S. P. D.
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No. 40 Natco Straight Line Multi.

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80 lb. Bradley Cushion Helve Hammer
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Nos. 1 & 2 Davis Keyseaters.
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No. 163B Consolidated Dbl. Crank.
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Nice Variety of Sizes of Presses.

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GEAR CUTTERS; G & E 36", G & E 48", G & E 60" & B & S 26" s. p. d. automatic spur; Fellows 36" gear shaper.

GRINDERS; P & W 12" vert. surf.; Cin. No. 1½ & B & S No. 12 univ. tool, B & S Nos. 11&16 plain, Heald Nos. 60 & 65 Int. B&S No. 13 Univ. & Tool; Landis 10x30" Plain; B&S 10x48"; 4—Norton 6x32" plain.

HONING MACH.; Hutto 2-spindle Vert. M. D.

KEYSEATERS; M & M No. 2 vert. Burr horiz.

LATHES; Reed-Prent. 16"x8' grd. hd.; LeBlond 18x8', Lehmann 18"x9', Hendey 18"x8'; Amer. 22x8', Whit. Blais. 22"x8'; Davis 22"x10'; L & S 20"x10', S-B & E 20"x10' q. c. g.

MILLING MACHINES; Ohio No. 24, Kemp. No. 3, B & S No. 3, Cleve. No. 1 s.p.d. univ. B. & S. No. 2, Amer. No. 1½, Cin. No. 3, B & S No. 3, Hendey No. 3, LeBlond No. 3, Mil. No. 3-B & Cinc. No. 3 s.p.d. pl. Becker Model "B" & No 6 vert.; Kemp. s p.d. Prod.; Ingersoll slab, m. d. 33", table 30½"x16'.

PLANERS; Gray 30"x30"x10', Flather 24"x24"x6'; N-B-P 48" x 20' 4 hds.; Gray 28"x28"x6' 1-hd.

PUNCH PRESSES; Bliss No. 19 o. b. i.; Toledo No. 35 cl. back Toledo No. 3 o.b.i.; Fer. No. PG-3 cl. back, L.&J. No. 3; Federal Nos. 1, 2, 3 and 4 o. b. i.; R. & K. No. 30 o. b. i. Bliss No. 62 geared.

SAWS (HACK); Racine 6x6" H. S. Atkins 8x8" H. S. Peerless 6x6" M. D. Univ. Shaping.

SHAPERS; S & M. G & E, Ohio, Mil., Q. City, Davis, Cin. 16"; Ohio & G & E 20"; S & M., Q. City, Rock, 24"; Ohio 26"; Cin. 24" s. p. gr. box; Rock. 24" m. d. gr. box; Rhodes 3½" Vertical.

SCREW MACHINES; W & S No. 6 Hand; Nat. Acme. Nos. 515, 52, 55, & 56 4-sp; Gridley 4-sp. ⅞" & 4-sp. 1 ¾" cap.

TAPPING MACHINES; (2) Garvin No. 2 Vertical Automatic.

THREAD MILLER; Moline No. 10.

TURRET LATHE: Bullard 36" vertical, rapid production.

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3½" Landis, No. 35, Floor.
5" bar, Niles Floor Type.
8" bar, Betts Knee Type.

BORING MILLS, Vertical

24" Bullard, Rapid Production.
42" Bullard, Power Rapid Traverse.
60" Bullard, P. R. T., M. D.
72" Bullard, Self Cont.

DRILLS, Radial

2', 3½', 4', 5' Americans.
2, 4, 6, Spindle Allens.
3' American Sensitive.
4' Amer. Tri. Pur.
4 Spindle Kokomo, 12½" overhang.
4' and 6' Mueller, Gear Box (2).
6' American universal.

GRINDERS

8"x16" Heald Rotary Surface.
No. 2 Fraser Univ. 10"x30".
10"x36" Landis Plain (3).
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12"x36" Landis Plain.
12"x52" Landis Self Cont.
16"x48" Landis crankshaft.
16"x50" Norton Self Cont.
26" x 96" Landis Self Cont.
28" x 120" Landis Self Cont.
48" Badger face, Hyd. Feed.
No. 2 Diamond 36"x12"
84"x12" Diamond Surface.
No. 55, 60 and 65 Heald Cylinder.
No. 70 Heald Internal.
53" Besley Vert. Spin. Disc.
14" P & W Surface M. D.
No. 2 B. & S. Surface M. D.
No. 103 Rivet Internal.

LATHES

7"x60" Fitchburg Low Swing.
16"x12' South Bend.
18"x7' Lehmann Grd. Hd.
18"x8' Whitcomb-Blaisdell Cone.
18/36"x8' Fay Scott Gap.
19" x 8 and 10' LeBlond Cone.
20"x8' American Cone.
24" x 10' and 12' American Cone.
24"x12' Putnam Q. C. G., Cone.
24"x19' American L. C. G.
26"x10' Boye & Emmes QCG Cone.
28"x17' Chard, Grd. Hd.
30"x12' S & B Cone. T. A.
32"x22' Schumacher Boye.
36"x16' Bridgeford AC M. D.
42"x18' New Haven. Cone.
42"x20' Bridgeford Grd. Hd.
60"x23' Putnam. Cone.
60"x30' Pittsburg Grd. Hd.

MILLERS, Production

4" Pratt & Whitney Spline.
8"&12" Pratt & Whitney.
28" Cincinnati Semi Automatic
No. 7H Becker.

MILLERS, Vertical

Model CS Becker Continuous.
Model B Becker, feeds 36x14x15, spd.
No. 5B Becker, Cone.
No. 2 Knight.

MILLERS, Plain

No. 5 Cincinnati Grd. Hd. P. R. T.
No. 3 Cinci. Univ., M. D.
No. 4G LeBlond Grd. Hd.
No. 3G Hendey Grd. Hd.
No. 2B Heavy, B. & S.
No. 3B Heavy B & S. Geared Head.

PLANERS

84"x84"x18' N. B. P., M. D 4 hds.
72"x72"x14' Betts 4 Hds.
72"x60"x16' Detrich & H. openside.
48"x48"x10' D & H Openside.
42"x36"x12' & 24"x6' Cinci. M.
36"x36"x18' Sellers. 4 Heads.
30"x30"x10' D & H Openside.
24" Lynd Farquhar Openside.

PRESSES

No. 8½ Z. & H. Percussion.
400 ton N.B.P. Hor. Hyd. Carwheel.

ROLLS

12'x1½" N. B. P. M. D.
17'x1½" Niles A. C. m. d.

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10x10 Napier Metal Band Saw.
6x6 Avey Milband.
8" Atkins, M. D.
No. 2B Gorton Internal, 7½".
6" Peerless univ., shaping.

TURRET LATHES

4L Gisholt—no cross slide carriage.
24" Gisholt Cone 5½" H. S.
26" Libby, 7½" spindle hole M. D.
No. 3A Warner & Swasey.
24"x24" & 3"x36" J. & L.
No. 1 American Fox. Bk. Grd.

MISCELLANEOUS

18" & 18" Dill Slotters.
18" & 24" NBP Slotters.
10' x 10 ga. Chicago Apron Brake.
18" Gridley Automatic 4 Spindle.
24" Gridley Single Spin. M.D. Auto.
Nos. 23, 24 & 34 New Britain chkg.
Bolt Header, 2" Ajax.
2½" Landis Bolt Cutter.
Nos. 3B & 4 LaPointe, Screw.
Flanger, 9" McCabe Pneu.
No. 13H B. & S. Gear Cutter.
11" Gleason Bevel Generator M.D.
Hammers, 6B, 5N & 2B Nazels.
Pipe machine, 6" Oster M. D.
2" Bignall & Keeler Pipe Machine.
8" and 6" Saunders, Pipe Machine.
24", 20", 16" Smith & Mills Cone.
Shaper, 24" G. & E. Cone.
Shear, 10'x3/16" Loy & Nawrath.

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24" Bullard, V. T. L.
30" Bullard, single turret.
34" Colburn, single turret.
42" King, 1 standard, 1 turret head.
42" Detrick & Harvey.
60" Gisholt.
100" Betts.

GRINDERS

No. 2 Cincinnati centerless.
Nos. 70, 72, 72A3 & 75 Heald.
No. 12 Bryant internal.
26" No. 16 Blanchard.
12" Arter rotary surface.
12"x24" Diamond surface.
No. 2 Wilmarth & Morman surface.
30"x72" Springfield surface.
6"x18" to 16"x53" Landis.
6"x32" to 14"x72" Norton.
12"x24" & 12"x60" Modern.
12"x18" & 12"x36" Cincinnati.
10"x30" Webster & Perks univ.
No. 2 Bath universal.
No. 4 Brown & Sharpe univ.
20", 24" & 30" Gardner disc.
Nos. 220 & 221 Badger disc.
30" Ransom 7½ H P elec. snagger.
16"x48" Landis crank.
16"x32" Norton crank.
10"x24" & 10"x36" Norton cam.
30"x84" Diamond face.
8" Arter auto. piston ring.

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Nos. 18H and 24H G. & E. hobbers.
Nos. 1 and 5A Lees Bradner.
No. 12 Barber Colman.
Nos. 6 & 715 Fellows.
11" Gleason bevel.
Nos. 3 & 4 Brown & Sharpe auto.
36" Newark automatic.
28" G. & E. auto. spur & bevel.
No. 2 Bilton automatic.
Lipe 2 spdl. chamferer.
15" Gleason quenching press.

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10"x5' Pratt & Whitney toolroom.
14"x6' Monarch.
14"x6' American geared head.
16"x6' Monarch.
16"x8' Walcott Taper & relieving.
16"x8' & 16"x10' Lodge & S. grd. hd.
18"x8' Boye & Emmes.
20"x8' Cisco.
21"x18' LeBlond heavy duty.
22"x10' Davis.
24"x12' Lodge & Shipley.
26"x11' Wickes.
27"x12' Schumacher Boye.

PLAIN MILLERS

Nos. 2, 3 and 4 Cincinnati.
Nos. 1½, 2 hvy., 3B & 4B B. & S.
No. 4 Hendey.
No. 4 LeBlond.
No. 3 Kempsmith.
No. 2½ Rockford.

MILLERS UNIV. & VERT.

No. 1½ Rockford.
No. 2 Cincinnati.
No. 2 & 3A heavy Brown & S.
No. 2 B. & S. vertical.
No. 6 Becker vertical.

MILLERS PROD.

18" Cincinnati plain Mfg.
18", 24" & 48" Cincinnati automatic.
24" & 48" Cincinnati duplex.
No. 1 Davis & Thompson drum.
24" Newton rotary.
28", 37" & 42" Briggs.
48" Ohio tilted offset.
Nos. 1 & 2 Kent Owens hand.
Kent Owens semi-automatic.
4" No. 770 Newton spline.
No. 7 Becker, Lincoln type.
No. 13B Brown & Sharpe mfg.
Trundel thread miller.

PLANERS

24"x24"x24' Cincinnati crank.
24"x24' x6' Liberty openside.
30"x30"x12' Cleveland openside.
32"x32"x12' Niles.
36"x36"x8' Gray.
36"x36"x12' Gray.
36"x36"x16' Cleveland.
48"x36"x10' Liberty.

PRESSES

No. 19 Bliss OBI.
No. 75 Toledo geared.
No. 56½ Toledo.
No. 74½ Bliss.
Nos. 64 & 65 Consolidated.
No. 63 Michigan.
No. 7 Rockford.
No. 94 Consolidated.
Nos. PG4 & PG5 Ferracute.
No. 25½ Consolidated horn.
600 ton Cleveland coining.
Nos. 1½B & 5A Bliss Toggle.
No. 266 Consolidated cam drawing.
No. DDG54 Ferracute cam drawing.
No. 2 Standard screw.
No. 7 Z. & H. Percussion.
3, 8 & 20 ton General Flexible.
3 and 12 ton Fox Superflex.
15 ton Lucas forcing.
30 ton Atlas forcing.
40 ton Jarecki die tryout.

2000 TOOLS IN STOCK. SEND FOR LIST.

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Automatics
No. 2G Brown & Sharpe.
3½", 4½" Gridley sgl. spindle.
4½" Cleveland "Model A"

Boring Machines (Hor.)
5" bar NBP. floor type.
5" bar Newton Portable.
No. 3 Hamilton, 4½" bar.
No. 3-A Universal, 3" bar.
No. 1 Cleveland, 2½" bar.

Boring Mills (Vertical)
24", 36", 42" Bullard, "New Era".
36", 52" and 62" King.
42", 48", 54" and 60" Colburn.

Drills (Ball Bearing)
1, 2, 3, 4, 6 Spindle L-G.
1, 2, 3, 4, 6 Spl. Henry & Wright.
4 spindle Demco, p. f.

Drills (Mfg.)
32" Cinn.-Bickford sliding head.
No. 2 Colburn, 1, 2, 3 and 4-spdl.
No. 210 1&3 spdl. Barnes.
No. 3—24" Defiance.
Nos. 121, 314, Baker.
No. 14 Natco Multiple.
No. 4 Bausch. mult.

Drills (Radial)
4' American plain.
5' American triple purpose.
5' American. full univ., m. d.
6' Cinn.-Bickford full univ.
6' American Triple purpose.

Gear Cutters
Nos. 2, 3 & 12 Barber-Colman.
No. ½ Pfauter hobber.
No. 18-H G & E. hob.
No. 16HS Gould & Eberhardt.
Nos. 6, 61, 62, 65, 615, 625 Fellows.
No. 4-36" & 48" B. & S.
No. 2—60" Goss hobber.
96" Newton heavy duty.

Grinders (Plain)
36"x48" Landis crankpin.
Heim Centerless.
Nos. 10 and 12 B. & S.
6"x32" Norton.
10"x18", 24", 36" Norton.
10"x50", 72", 96" Norton.
10"x36", 52" Landis.
14"x36", 50", 72", 96" Norton.
18"x96" Norton, m. d.
18"x144" Norton, m. d.
20"x168" Landis, m. d.

Grinders (Univ.)
No. 13 B. & S. cutter & tool.
No. 2 Brown & Sharpe.
No. 4—12"x66" Landis.

Grinders (Misc.)
No. 70 Heald, Internal
No. 10 Blanchard surface.
No. 16A Blanchard surface.
16" Arter rotary surface.
15"x17"x8', 8' Norton, o. s., surf.
No. 1 Gardner, hyd., face.

Lathes
14"x6' Lodge & Shipley.
16"x 6' American.
16"x8' L. & S., T. A.
18"x8' Lodge & Shipley.
18"x10' Reed-Prentice grd. head.
20"-22½"x14' L. & S. sel. g. h.
22"—24½"x12' L. & S.
24"-27½"x12', L. & S. sel. g. h.
30"x11' American geared head.
36"x30' Rahn-Larmon grd. hd.
54"x23' Johnson, T. G.
66"x21' Putnam t.g., m. d.

Millers (Plain and Universal)
Nos. 0, 1½, 2, B. & S.
Nos. 2 & 3 Cinn. h. p., s. p. d.
Nos. 2-B, 3-B Milwaukee.
Nos. 2-B, 3-B, 4-B B. & S.
Nos. 4 Cinn. h. p., s. p. d.

Millers (Mfg.)
No. 5 48" Cincinnati hydromatic.
18" & 24" Cincinnati automatic.
No. 33—60" Kempsmith.
No. 3E & No. 4 Lees-Brad. thread
36"x36"x12' Newton Duplex.
38"x44"x20" Ingersoll slab.

Millers (Vert.)
Nos. 2 & 3 Cincinnati h. p.
No. 3-B Milwaukee.
No. 5-B Becker.
No. 6 Becker.
No. C-2 Becker.

Planers
24"x24"x12' Gray.
30"x30"x14' Gray, rev. m. d.
30"x30"x6', 18' Cincinnati.
36"x36"x8, 18' Cincinnati.
44"x36"x12' Gray.
36"x36"x 14'- 24' Cleveland o.s.
36"x36"x24' Gray.
42"x42"x30' N-B-P, Rev. m. d.
60"x48"x16' Gray max. service.
72"x60"x16' American.

Shapers
16" Walcott.
16" Stockbridge.
24" Gould & Eberhardt.

Turret Lathes
No. 4 W. & S. univ. grd. hd.
No. 1-A Warner & Swasey.
No. 2-A Warner & Swasey.
No. 3 Cincinnati-Acme, a. c., b. f.
No. 3-A W. & S., Timken brg.
No. 4-A Warner & S., 7½" H. S.
No. 4-L Gisholt, 9½ h. s.

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92"x87"x42' N.-B.-Pond.
84"x84"x20' N.-B.-Pond.
84"x60"x14' N.-B.-Pond.
72"x72"x12' N.-B.-Pond.
56"x56"x12' N.-B.-Pond.
56"x48"x12' Cincinnati.
48"x48"x20' Detrick and Harvey.
48"x48"x10' Cincinnati.
42"x42"x20' Niles-Bement-Pond.
36"x36"x14' Gray.
30"x30"x8' Cleveland Openside.

GRINDERS

No. 16 Blanchard Vertical.
14" Pratt & Whitney Vert. Surface.
No. 33 Abrasive Surface.
No. 20 Heald Rotary.
12"x36' Landis Plain.
14"x50" Norton Plain.
14"x72" Norton Plain.
14"x96" Norton Plain
18"x84" Landis Plain.
Nos. 2, 3, 4 B. & S. Universal.
No. 13 B. & S. Universal.
No. 1 LeBlond Universal.

MISCELLANEOUS

40'x1" Southwark Bending Roll.
13"x½" N.-B.-P Bending Roll.
90" Niles-Bement-P. Wheel Lathe.

SHAPERS

48" Morton Draw Cut.
28" Columbia.
26" Cincinnati Traveling Head.
24" Gould & Eberhardt.
24" American.
16" Gould & Eberhardt.
6" Pratt & Whitney Vertical.

BORING MILLS

16' Niles-Bement-Pond Vertical.
10—16' Betts Extension Vertical.
96" N.-B.-Pond Vertical.
90" Pond Vertical.
84" Bullard Vertical.
84" Betts Vertical.
60" Colburn Vertical.
62" N.-B.-Pond Vertical.
53" N.-B.-Pond Vertical.
44" N.-B.-Pond Vertical.
36"—44" Niles-Bement-Pond Vert.
36" Bullard New Era.
24" Bullard New Era.
7" Bar D and H H rizontal.
6" Bar Espen Lucas Horizontal.
No. 6 Barrett Horizontal.

LATHES

109"x50' Niles Bement Pond.
96"x50' Niles-Bement-Pond.
36"x26' Lodge & Shipley.
30"x36' Bridgeford.
30"x14' Lodge & Shipley.

RADIALS

6' Cincinnati-Bickford Plain.
5' Cincinnati-Bickford Plain.
5' American Triple Purpose Plain.
5' Niles Right Line Plain.
4' Cincinnati-Bickford Plain.

MILLERS

No. 4-B Brown & Sharpe Plain.
No. 4 Cincinnati Plain.
No. 3-B Milwaukee Plain.
No. 3 Cincinnati Plain.
No. 2 Cincinnati Plain.
No. 2 Cleveland Universal.

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Niles-Bement-Pond No. 1½ portable 3½" bar, horiz.
Beaman & Smith 5" & 6" bar, horiz.
Bullard 24" vert.
N. B. P. 42", 44", 51", 52" vert.
Colburn 54", 2 swivel heads, vert.
Pond 90", 2 heads vert.
Niles 10' vert.

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Gridley 9/16", 7/8", 1½", 1¾" 2½".
New Britain Nos. 22, 24, 33, 454.
Potter & Johnston Nos. 6A and 7A.
Cleveland 2", 3½", 3", 4" model A.

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Brown & Sharpe No. 4—48".
Brown & Sharpe No. 6, 72".
Fellows No. 6, 61, 615 gear shapers.
Fellows Nos. 7, 71, 712 gear shapers.
Fellows No. 8B burnisher.
Lees Bradner planisher.
Gleason 24" gear planers.
Barber Colman Nos. 3, 12 hobbers.
Cleveland 8 spindle gear hobber.

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Heald No. 72-A, 3 sizematic.
Bryant No. 3 internal.
Blanchard Nos. 16, 18 surface.
Heald Nos. 50, 55, 60, 65 internal.
Norton 14x72, plain cyl.
Pratt & Whitney No. 14 surface.

LATHES

Niles Bement Pond 46"x15' q. c. g.
Putnam 36"x28' grd. hd. nearly new.
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Bridgeford 36"x60' boring & turning.
Bridgeford 36"x60' boring.
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LeBlond 25"x12', cone drive.
Lodge & Shipley 24"x10'.
LeBlond 21"x10' cone drive.
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Natco C-13-H hydraulic.

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Brown & Sharpe 6F Screw Mach.
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Gisholt 24" Turret.
Warner & Swasey No. 6.

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B. & S. No. 2, 2B, 3, 4 Plain SPD.
Brown & Sharpe No. 2, 3A univ.
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Gooley & Ed. (Briggs) types A&B.
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Ingersoll 21"x24"x12' planer type.
Ingersoll 24"x24"x12' adj. rail.

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RADIAL DRILLS

American 3'.
Reed Prentice 4'.
American 5' triple purpose plain.
Cincinnati Bickford 5' universal.

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16"x8' Whitcomb-Blaisdell geared head, new
18"x8' Whitcomb-Blaisdell, geared head.
16"x6' Hendey, tie bar.
24"x12' New Haven, quick change.
18"x8' Lodge & Shipley, geared head.
40"x20' Lodge & Davis, cone head.
40" raised to 53" Prentice, cone head.
1"x18" Pratt & Whitney AUTOMATIC.

BORING MILLS

2½" Cleveland horizontal.
42" Niles Vertical, 2 heads.
42" Gisholt, turret and plain hd., motor dr., power rapid traverse.
54" Bausch two heads.
60" Bullard, 2 heads, D. C. motor drive.
42" Niles Car Wheel Boring Mill.

MILLING MACHINES

No. 5 Brown & Sharpe plain, single pulley.
No. 4 LeBlond Universal, cone head.
No. 3-H LeBlond Plain Heavy Duty.
24" Oesterlein Universal, cone drive.
1-B Kearney & Trecker, double overarm, motor driven.

DRILLING MACHINES

24" Barnes four spindle, Camel Back.
20" Barnes four spindle, tapping attachment.
24" Prentice upright, gear box, single pulley.
No. 310 Baker Heavy Duty, threading attachment.
5' Carlton, motor drive.
4' Ryerson, gear box.
6' American, gear box.

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30" Diamond Face Grinder, texrope drive, with motor.
7½ H. P. U. S. Electric Grinder, A. C. Motor Driven.
Churchill Vertical Spindle Grinder.
14" Pratt & Whitney Surface Grinder, motor driven.

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No. 4 Warner & Swasey, power feed cross slide and turret.
No. 4 and No. 6 Warner & Swasey turret lathes.
No. 3-12"x48" Cincinnati Cylindrical, motor driven.
6¼"x24" Gisholt.

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24"x8' Gray, one head.
24"x10' Cincinnati, one head.
36"x12' Cincinnati, two heads.
48"x10' Belmer, four heads.
20" Columbia Shaper, cone driven.
16" Milwaukee, V-Ram, cone driven.

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12'x12 gauge Toledo Shear.
8' Robinson toggle press.
2½" Landis Bolt Cutter, lead screw.
No. 613 Toledo Gang Slitter.
Cleveland Punch and Shear, 1½" thru 1", motor driven.
No. 65 Consolidated Press, geared.

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Bolt cutter, 2½" Landis, lead screw.
Bolt cutter, 1¾" Nat'l. single head.
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Die filer, No. 5 Rearwin, motor drive.
Drill, 5' Dreses, univ. radial arr. m.d.
Drill, 2½' Fosdick radial, m. d.
Drill, 26" Barnes sldg. hd. tap. att.
Drill, No. 2 Avey, arr. m.d.; 12" ovhg.
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Drills, 3 & 4 spidle Aveymatics.
Drill, 4 spdl. L-G. No. 3 MT. pwr. fd.
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Grinder, No. 25 Heald hyd. rot. surf.
Grinder, 12x36 Thompson, univ m. d.
Grinder, No. 1 B &S. univ., belt dr.
Grinder, No. 2 B. & S. surface. m. d.
Grinder, No. 2 Reid surface, m. d.
Grinder, No. 3 Oakley univ. T &C.
Grinder, No. 3 Wilmarth & Mor. surf.
Hammer, 3A High Speed Riveting.
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Lathe, 20"x10' Hamilton, q. c. g.
Lathe, 24"x12' S. & Boye, q. c. g.
Lathe, 20"x10' B. & Emmes, q. c. g.
Lathe, 20"x8' Hamilton, q. c. g.
Lathe, 18"x8' Hendey, q. c. g.
Lathe, 18"x8' Lodge & Shipley, q.c.g.
Lathe, 16"x8' Lodge & Shipley, q.c.g.
Lathe, 16"x6 C. & J., grd. hd., t. b.
Lathe, 15"x6' C. & J. cone hd. new.
Lathe, 14"x6' Lodge & Shipley, q.c.g.
Lathe, 14"x6' Hendey, q. c. g.
Lathe, 12"x5' Hendey, q. c. g.
Miller, No. 2B B. & S. plain, m. d.
Miller, No. 2A B. & S. univ., m. d.
Miller, No. 14 C. & Bly; univ. m. d.
Miller, No. 1 B. & S. vertical, m. d.
Miller, 1-M Cinn. vertical, s. p. d.
Miller, No. 4 Cinncinati plain.
Miller, No. 2½ Rockford universal.
Press, No. 74½ Bliss, grd; tie rod.
Press, No. 4A Bliss horn; stiles type.
Press, DD 201 Ferracute, 200 ton cap.
Presses, Nos. 1 to 4 Rock; o. b. i.
Saw, 6"x6" Peerless univ. shap., m. d.
Saw, No. 6 Marvel, high spd. 6"x6".
Scleroscope, Model "C & D" Shore
Screw mch., 1¼" Cleveland auto. "A"
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Shapers, 20" G. & E. & Milwaukee.
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Air compressors, 30′ to 2000′.
Bolt threader, 2 heads, Nat. 1″.
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Boring mill, 8—12′ Betts, vertical.
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Drill, radial, 4′ Dreses.
Drills, 25 various, upright.
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Drills, Colburn D4.
Drills, Baker 24″.
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Furnaces, various sizes.
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Gear cutters, No 1&3 Adams hobbers
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Grinder, 6x18″ Ott.
Hammers, Drop, various sizes.
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Hammer, 200 lb. Bradley.
Hammer, steam 4000 to 250 lb.
Hammer, 80 Perfect.
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Lathe, 27″x14′ LeBlond.
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Lathe, turret No. 6 Woods, tilted.
Lathes, 3 Gridley 2¾″, Model F., 4 sp.
Miller, No. 22 universal.
Miller, Pratt & Whitney spline.
Miller, No. 4 Brown & S., plain.
Miller, Waltham thread.
Millers, No. 1 U. S. hand.
Millers, Ingersoll, 27″x24″x10′.
Planer, 36x36x12 W. & P., 2 heads.
Planer, 32″x32″x12′ Gray.
Planer, 30x30x8 Cinn. 1 head.
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Drill Multiple, Bausch 20-spindle M. D.
Drill, Colburn D-4—24".
Drill, Moline No. 5 Hole Hog.
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Drill Radial, Bickford No. 3—6' full univ.
Die sinker, Pratt & Whitney No. 4, cherrying attach.
Grinder, Landis 15x8 Hydraulic Int. M. D.
Grinder, Van Norman No. 3½ Radius.

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Miller, Ingersoll 48x24x12, three heads, M. D.
Miller, Ingersoll 24x24x10 M.D. 1-hd. on rail 2-side hds.
Turret Lathe, Warner & Swasey No. 3-A.

Grinder, Besly No. 1 double disc, M. D.
Keyseater, Mitts & Merrill Nos. 0 and 3 with broaches.
Lathe, McCabe double spindle 26—48x12'.
Lathe, Pratt & Whitney 1x18 automatic.
Press, Toledo No. 30 Bench.
Press, Bliss No. 61 Reducing.
Press, Bliss, No. 68 double action.
Press, Zeh & Hahnemann No. 8½ power percussion.
Press, American Can No. 5 Inc. F. W. T.
Press, Walsh No. 5½ Inc. F. W. T.
Press, Bliss-Styles No. 259 Toggle Joint Pendulum.
Punches, Kling No. 2 & No. 4.
Roll, Beloit No. 3-E—6' slip.
Roll, 10' power, cap. ¼" C. P.
Saw, Klemm No. 2 metal tilting.
Shear, Kent 4' power, cap. 10-ga.
Shear, Niagara No. 230 power, cap. 16-ga.
Shear, Pexto 36" gap.
Shear, Badger, No. 27 splitting.
Shear, Quickwork rotary 60", cap. 14 ga.
Shear, Yoder 6'-14 ga.

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1441 N. Third St., Milwaukee, Wis.

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Automatics, Gridleys 2¼" (5).
Automatics, No. 00 B. & S.
Buffers, No. 100 U. S. Motor Driven.
Bulldozer, No. 24 Williams & White.
Burr Cutter, Teer Wickwire.
Drill, Radial, 3' Amer. Motor on Arm.
Drill, Radial, 3½' Morris.
Drill, Radial 3' Western.
Drill, 6 spdl. Hammond Horiz. Opposed Type magazine feed, m. d.
Drills, 21" & 24" Cincinnati B. (28).
Drills, Baker Nos. 121, 217, 314, 416.
Drill, Henry & W. 4 sp., No. 2 M.T.
Drill, 4-Spdl Leland-Gifford No. 2MT 13" Overhang m. d.
Drill, 4-Spdl. Allen No. 2 MT 15" Overhang m. d.
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Furnace, Homo Electric.
Lathes, 19"x12' LeBlond, Q. C.
Lathe, 16"x6' Hendey SPD.
Lathe, 18"x8' Hendey bMD.
Lathe, 30"x10' Reed Prentice M. D.
Lathes, Tur., No. 9 B & O Univ. (2).
Mills, No. ½, 1½-A & 2B K. & T.
Mills, Rotary, No. 1 & 2 Craftsman.
Mills, No. 2 & 3 B. & S. Vert. M.D.
Mills, No. 2B & 3B B. & S. S. P. D.
Mill, No. 3GH Hendey Univ.
Mills, 18" and 24" Cin. Prod.
Mill, 18" Cincinnati, Duplex.
Mill, No. 2A B. & S. Univ. M. D.
Oil Groover, Wicaco.
Pipe Threaders, 6" Oster, B. D.
Planer, 60"x60"x12' Niles Bement Pond, Box Table.
Press, No. 14 Toledo Hor. Gr., M.D.
Press, No. 204-A Bliss Adj. Bed.
Press, No. 4A Bliss, adj. bed.

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No. 1A and 2A W. & S. Turret Lathes, M. D.
54" Colburn and 60" Bickford Vertical Boring Mill.
No. 72 Heald Hydraulic Internal Grinders, M. D., (4).

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Grinder, Bath Universal.
Grinder, No. 70 Heald Duplex, Internal.
Grinder, No. 75 Heald Internal.
Grinder, No. 84 Gardner Dble. Disc, Opposed Type, Auto. Feed, M. D.
Grinders, No. 13 B. & S., M. D. (3)
Grinder, No. 2 B. & S. Universal.
Grinder, Pratt & Whitney Surface, M. D., B. B. spindle.
Grinder, No. 7½ Gardner Disc, M.D.
Grinder, No. 70 Heald Internal (3).
Grinder, No. 72 Hyd. Int. Heald, M. D., (3).
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Grinders, No. 12A and No. 20 Bryant
Grinder, No. 1 Wilmarth & M. Surf.
Hammers, Nos. 3A & 4A Hi-Speed.
Keyseater, No. 1 Davis 1" cap.
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Presses, Nos. P2, P3, P4 Ferracute M. D.
Press, No. DG53 Ferracute (3).
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Press, Cleveland, No. 44 Adj. Bed.
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Shaper, 20" Columbia Gear Box M.D.
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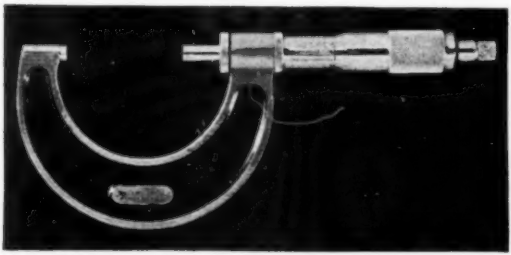

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Presses, No. 21 Bliss O.B.I.
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10' Niles, 2 swivel heads.
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60"x30' Pittsburgh, Motor Drive.
28"x17' Chard, motor drive.

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42" Gisholt.
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No. 3 Kempsmith Plain.
No. 2 LeBlond Universal.
No. 3-B Milwaukee Vertical, Motor in base, P. R. T.
No. 2, 4 Cincinnati vertical.
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8' Cincinnati-Bickford Enclosed Head, M. D.
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42"x27' American 16 speed G. H.
34"x12' Lodge & Shipley.
32"x17' Houston Stanwood & G.
20"x8' American.

MISCELLANEOUS

Drill, No. D4 Colburn Heavy Duty; 36" Cincinnati-Bickford Tapping.
Grinders, No. 16 Blanchard Direct M. D., 25 H. P. Motor.
Grinder, No. 1 and No. 13 Brown & Sharpe Universal.
Grinder, No. 65 and No. 70 Heald Internal.
Grinders, No. 3 Bryant internal;—No. 3 Wilmarth & Morman Surface.
Press, 50 Ton Lucas Power Forcing.
Shear, No. 2 Hilles and Jones Squaring, 28" gap, 74"x¼".
Slotter, 18" Dill, Motor Drive.
Turret Lathes, 26" Libby 7½" spindle—26" Libby 4½" spindle.
Turret Lathes, 24" Gisholt 6¼" spindle; No. 5 Foster.
Turret Lathe, 3"x36" J. & L.—Bar and Chucking.

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48"x48"x12' Cleveland Open Side Planer, Factory Rebuilt
36"x36"x16' Cleveland Open Side Planer, Factory Rebuilt

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4' (No. 14GA) & 8' (No. 18GA) Chicago Steel Brakes, Hand Operated.
No. 10 Besly Disc Grinder, 18" Discs.
No. 0—Owen Plain Milling Machine, rebuilt.
26" Kelley Shaper—motor drive arrangement, rebuilt.
No. 196 Niagara 8' Shear, motor drive, No. 18 ga. cap.
10" Niles Bement Pond Slotter, rebuilt.

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36" Crescent Band Saw. ½" saw.
2000 lb. B. & S. Brd. Drop Hammer.
5000lb.dbl.frameN.B.P. Steam ham.
1100 lb. sgl. frame steam Forg. Ham.
24" Gould & Eberhardt Shaper.
26"x11' Wickes D. B. G. Hvy. Duty All Steel Squar. Shear, 54", 14 ga.
10'x1" Wickes Bend. Rolls Pyr.Type.
8x8x1" H. & I. Angle Sh. on turntbl.
10' Niles Ver. Boring Mill, B. D.
6" Merrell pipe Cutting & Th. Mch.
Lennox Rotary Bevel Shear, ¾" cap.
84" Sellers Vertical Bor. Mill, B. D.
30" Bullard Mill, Turret Head.
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10tonHand pwr.trav.Crane46'8"span.
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72" BullardVert. Bor. Mill D.C.M.D.
No. 2 Baker Keyseater, M. D.

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Pipe Threader; 6" Williams M. D.
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BROACH—Hydraulic: No. 3 Type XA Oilgear.
DRILLS: 4 spdl., Aveymatic, L. & G. 20", 25", 28" Barnes, p. f.; 24" Cincinnati, b. g., t. a.
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24"x12' Schumacher Boye.
MILLERS: No. 2 Cincinnati, Grd. Univ.; Nos. 1 & 1½ B. & S., No. 2 Kempsmith, No. 35 Ohio. Vertical: No. 4-B Becker.
NIBBLER. No. 1 Campbell.
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SCREW MACHINES: No. 6 W. S., No. 1 & 5 Foster, No. 1 P&W.
SHEARS: 6' Bertsch, 6' Stoll, corrugating, 30" Bertsch; ring & circle, No. 05 Niagara.
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14"x6' Prentice.
16"x8' Hendey.
16"x9' Chase.
16"x8' Prentice.
16"x8' American.
16"x8' Monarch.
16"x8' LeBlond.
16"x6' Pratt & Whitney.
18"x8 LeBlond.
18"x8' Lodge & Shipley.
18"x8' Prentice.
18"x8' Schumacher & Boye.
20"x14' Hendey
20"x10' Greaves Klusman.
20"x8' LeBlond.
22"x8' Lodge & Shipley.
24"x10' Prentice.
24"x10' American.
24"x16' Sidney "Tritrol".
25"x10' Ryerson-Conradson.
26"x12' Wickes.
26"x16' Bridgeford.
26"x20' Bridgeford.
27"x16' LeBlond.
27"x16' Bridgeford.
30"x13' Wickes.
30"x11' H-S-G.
30"x26' Lodge & Shipley.
36"x22' Bridgeford.
36"x32' Bridgeford.
36"x38' Bridgeford.
36"x15' Lodge & Shipley.
42"x24' Putnam.
56"x20' Lodge & Shipley.
56"x34' Pond.

TURRET LATHES

No. 4—No. 7 Bardons & Oliver.
No. 4—No. 6 Woods Tilted.
Nos. 1A, 2, 2A, 3A, 4, 6 W. & S.
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Swing.
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Brown & Sharpe.
Nos. 2—3—3S—4 Cincinnati.
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& Trecker.
No. 2—No. 4 Kempsmith Maximil
No. 2—No. 3H LeBlond.
No. 0 Rockford.
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No. 3A Garvin univ.
No. 4B Kearney & Trecker univ.
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No. 4B Kearney & Trecker vert.
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D-1 Becker vert.
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E-4 Keller Profiling.
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No. 2 Pierle.
16"—24" Sipp.
12"—14"—16" Taylor & Fenn.

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28"—40" Aurora.
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21"—24"—28"—(25-36") Cincinnati.
20" Canedy Otto.
14" Excelsior.
21" Fosdick.
26"—32" Hoefer.
26" Hamilton.
22" Milwaukee.
28" Rockford.
21" Superior.
28" Snyder.
21"—25" Weigel.

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2½' Ayer Bench Type.
3'—4'—5'—6' American.
3' Carlton.
2½'—5'—6' Cincinnati.
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4' Fosdick.
3½' Morris.
5' Prentice.
5'—8' Riverson.
4'—6' Walborn.

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Nos. 314—315—422—513 Baker.
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No. 2—No. 4 Colburn Mfg.
D-2—D-4—D-5 Colburn.

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24" Defiance.
No. 1 Hoosier.
No. 23—24—25 Foote Burt.
No. 1 Minster.
No. 9 Natco-Minster.
No. 12 Minster.

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2-spindle No. 6 Colburn.
2-spindle 28" Cincinnati.
4-spindle 21" Cincinnati.
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2-spindle 22½" Barnes.
6-spindle No. 242 Barnes.

RAIL DRILLS

2—3-spindle No. 17 Foote-Burt.
4—spindle No. 1 Foote-Burt.
2—4 spindle No. 4½ Foote-Burt.
4-spindle No. 13D Moline.
8—spindle No. 64D Moline.
8-spindle Moline Hole Hog.

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Nos. 11—12—13—14—16—C5—C12
C13—13—B12C—No. 30 Natco.
No. 15HC—No. 27HC Fox Hyd.
No. 15—No. 22C—D-25 Fox.
No. 2—No. 3—No. 4—No. 36 Baush.
Boley.

GRINDERS

No. 16—No. 16A Blanchard.
No. 2 Brown & Sharpe.
No. 20—No. 22—No. 255 Heald.
No. 4 Diamond.
No. 5 Abrasive.
14" Model B Pratt & Whitney.
8"—14" Pratt & Whitney.
84" Diamond.
No. 1 Gardner.
No. 78 Wilmarth & Morman.
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McCabe 50"-27" Dbl. Spdl. DC MD
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Schum. & B. 26"x16' g.h.; qcg.; arr. md.
Reed 24"x12' l.c.g.; s.b.g.; cone dr.
Pond 26"x10' l.c.g.; s.b.g.; cone dr.
Schm. & B. 24"x10' qcg.; cone drive.
LeBlond 19"x10' hd. qcg; belt drive.
LeBlond 18"x8' l.c.g.; d.c. mtr. driven.
LeBlond 17"x6' Plain Turning; bd.
LeBlond 17"x6' Mfg. Type; belt dr.
American 16"x8' lcg; lathe; cone drive.
Bradford 16"x8' hd. q.c.g.; cone dr.
Chard 16"x8'; 60" centers cone drive.
Champion 14"x6' l.c.g.; belted cone dr.
Willard 13"x6' Semi-qcg, collets.
LeBlond No. 9 Multi-cut; air chk.; md.
Streit 24" Pulley lathe; cone dr.
Ideal 7"x28" Self-Con't. bench lathe.
Blount 11"x4' Speed lathe; bd.

SHAPERS

26" Walcott Plain Crank; belt drive.
24" Cincinnati, b. g., h. d. cone drive.
22" Ohio, b. g., cone drive.

MISCELLANEOUS

(2) 3¼" Gridley Auto. Scr. Mach. b.d.
2¼" Gridley Auto. Scr. Mach. b. d.
Bertsch 10"x10ga. Press Brake, m. d.
(4) B & S No. 3 26" gear cutters; b.d.
Fosdick 6' encl. hd. radial; mtr-on-arm;
Fosdick 5' box. col. radial; spd. thru gr.
Dreses 5' rd. col. radial; arr. SP or MD.
Dreses 5' pl. radial; arr. AC or DC.
Mueller 4' Plain Radial; spd gear box.
Barnes 3-spin. 22½" drill; all PF; BD.
Rockford 3-spin. 22½" drill all PF; BD
Foote-Burt 4-spin. HD; power fd. bd.
Mueller 4' rd. Column Radial; sp or md.
Cinci-Bickford 3' radial drill; arr. m.d.

Landis Plain Self-Contained Cylindrical grinding machine; capacity swings 20" takes 96" between centers; grinding wheel 24"x3"; arr. for motor drive; first class condition.

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3" bar Rochester horizontal; sp or m.d.
3" bar Fosdick horizontal; spd or md.
4" bar Fosdick No. 2-A Floor type cd.
King 42" Vertical bor. mill; 2 hds. md.
Rockford No. 1½ pl. milling mach. cd.

MILLING MACHINES

Cincinnati No. 4, HD plain.; cone dr.
Cincinnati No. 3 Universal; cone drive.
LeBlond No. 3-HD Plain; 3-step c.d.
Brown & S. No. 12 Plain Cone Drive.
Garvin No. 12 plain Miller; c. d.
Becker No. 4B vertical; rot table; bd.

PLANERS

60"x60"x14' Cincinnati; 2 hds.; b. d.
55"x55"x30' Betts, 2 hds.; d. c. m. d.
48"x36"x10' Gray; 2 hds.; d.c. m. d.
36"x36"x10' Gray; 2 hds.; d.c. m. d.

Moline 8-spin. hole hog type drill; spd.
Ohio No. 3 cutter & tool grinder; b. d.
Landis 20x96" pl. Cyl. grinder. b. d.
No. 2 Diamond surf. grinder, motor dr.
Heald No. 72 Hydraulic grinder b. d.
B & S 14"x72" Plain Cyl.; b. d.
Atkins No. 3 metal band saw; b. d.
Coch-Bly No. 5 metal cutting saw; spd
Gardner No. 24-53" bb disc grinder; md
Gardner No. 6 bb disc (20") grinder; bd
LeBlond No. 1 cut. & tool grinder; bd.
Landis No. 1½ universal grinder; b. d.
Foote-Burt No. 25 h. d.; drill; spd.
Foote-Burt 4-spindle adj. rail; b. d.
Avey 6-sp. Sensitive b.d.; belt drive.
Amer. 28" BG HD shaper; m. d.; late.
American Shaper; arr. for motor drive.
(2) 36"x36"x12' Chandler hd pl; BD
Toledo Power Squaring Shear; cap. 5/16"x12' 1"; arr. m. d.

THE E. A. KINSEY CO.

333 West Fourth St., *Est. 1886* **Cincinnati, O.**

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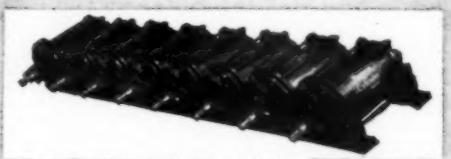

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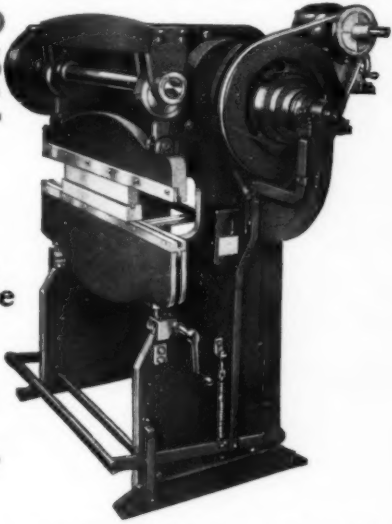

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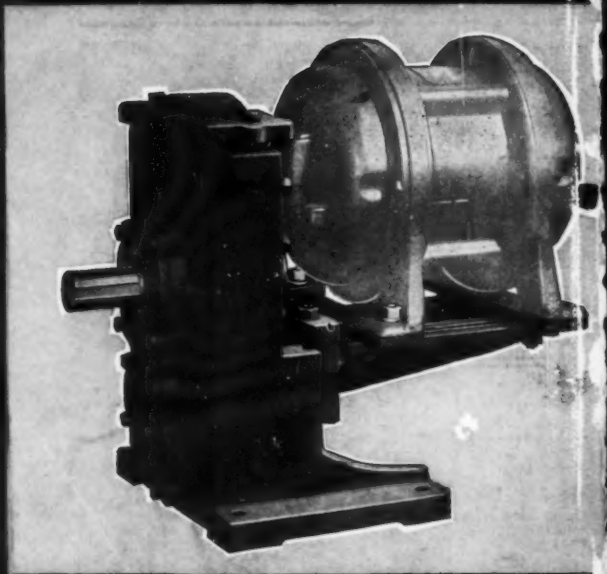

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